MARCH, 1961
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Construction Methods

EQUIPMENT

A McGRA

Big crane booms up high to set long and heavy bridge girder atop tall pier. Each of four girders in a span weighs 27 tons, is 50 ft long, 7 ft deep, 14 in. wide.

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THEY PLANNED ON YELLOW STRAND TO HOLD DOWN COSTS

when turning old El Camino Real into a modern highway

Photographed on the job with Silva and Hill Construction Co., So. San Gabriel, Calif.

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For complete information on the conveyor belt described here and all the other rubber products B.F.Goodrich makes for industry, call your B.F.Goodrich distributor or write *B.F.Goodrich Industrial Products Co., Dept. M-968, Akron 18, Ohio.*

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Construction Methods AND EQUIPMENT

MARCH, 1961

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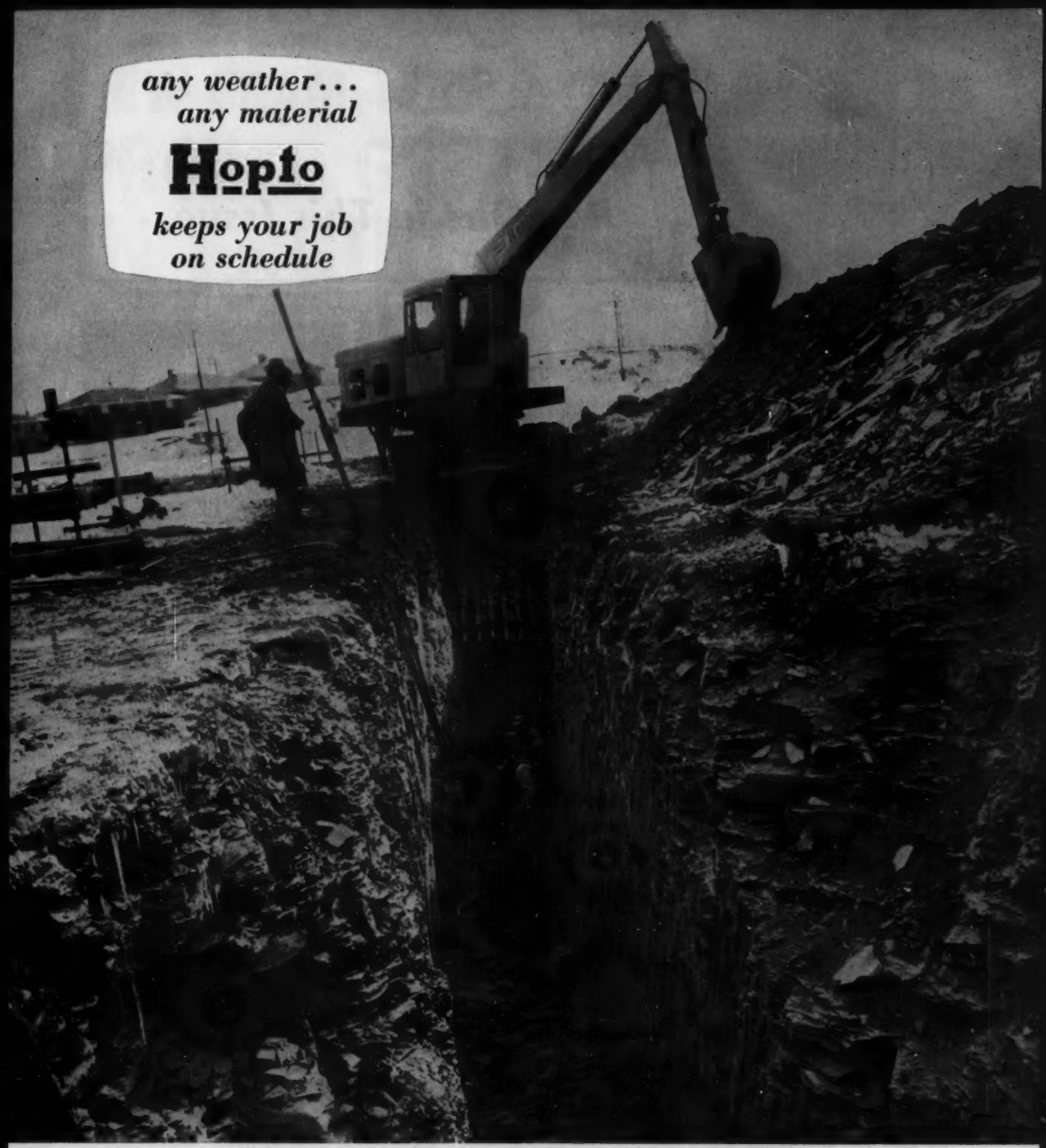

Carving through frozen blue shale this crawler-mounted Hopto kept the job moving despite extreme weather conditions. Cemented pipe laid on the smooth trench bottom was quickly backfilled to prevent freezing. Smooth hydraulic power, positive down pressure and live bucket wrist action enabled Hopto to keep the job on schedule.

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ON THE COVER

A Koehring crawler crane positions a 50-ft-long, 27-ton steel girder atop piers for a highway bridge that will connect Duluth, Minn., and Superior, Wisc. The girders were fabricated by Milwaukee Bridge Co. and erected four to a span by John F. Beasley Co. of Chicago, Ill. Massman Construction Co. of Kansas City, Mo., poured some concrete piers during the winter (*CM&E, Feb., p. 86*) to prepare the way for steel erection.

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NEXT MONTH

Construction of the tallest building in New Orleans involves more than the usual share of foundation problems that are common along the muddy Mississippi River banks. To protect buildings that surround the confined site, the contractor uses two types of sheet piling, a unique system of pipe braces, and specially designed pile caps. Excavation and concreting must be scheduled carefully to prevent damage to adjacent structures.

Photo Credits—65 Port of New York Authority; 77 Mal Gurian Associates; 83, center, U.S. Air Force.

MARCH, 1961

Pay Dirt in This Issue

Specs, Terrain Make Pipeline Project Tough . . . 92

The ditch for a 60-in. pipeline must be dug carefully so that the grade exactly matches the profile of the prefabricated pipe. Grades up to 120% make the job more difficult.

Automatic Concrete Plant Ends Guesswork . . . 96

Almost every component of this concrete plant has been custom-designed or extensively modified by the contractor. Television and electronic controls allow one man to operate it.

Conveyors Carry 50,000 yd of Concrete . . 126

A complex network of stationary and mobile conveyor units carries concrete as far as 800 ft to hard-to-reach pour areas during construction of Chicago's water filtration plant.

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Here are representative types of form ties, anchors, inserts, hangers, as well as several new items in Superior's most complete line of concrete accessories. Illustrated is the variety of concrete form work and related jobs in which Superior accessories are used. *All* Superior accessories are designed to provide the most dependable and efficient forming methods.

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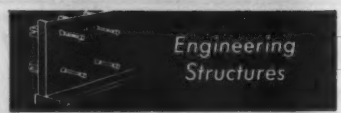

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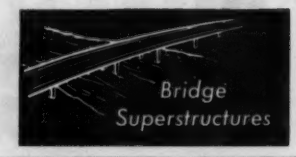

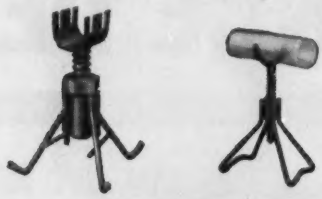

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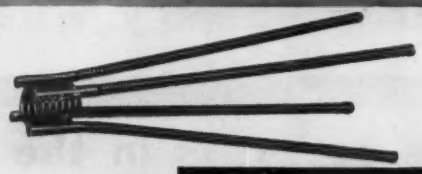

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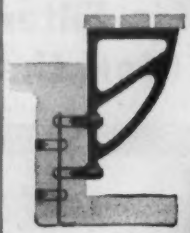

RISERFRAMES

PICK-UP INSERTS

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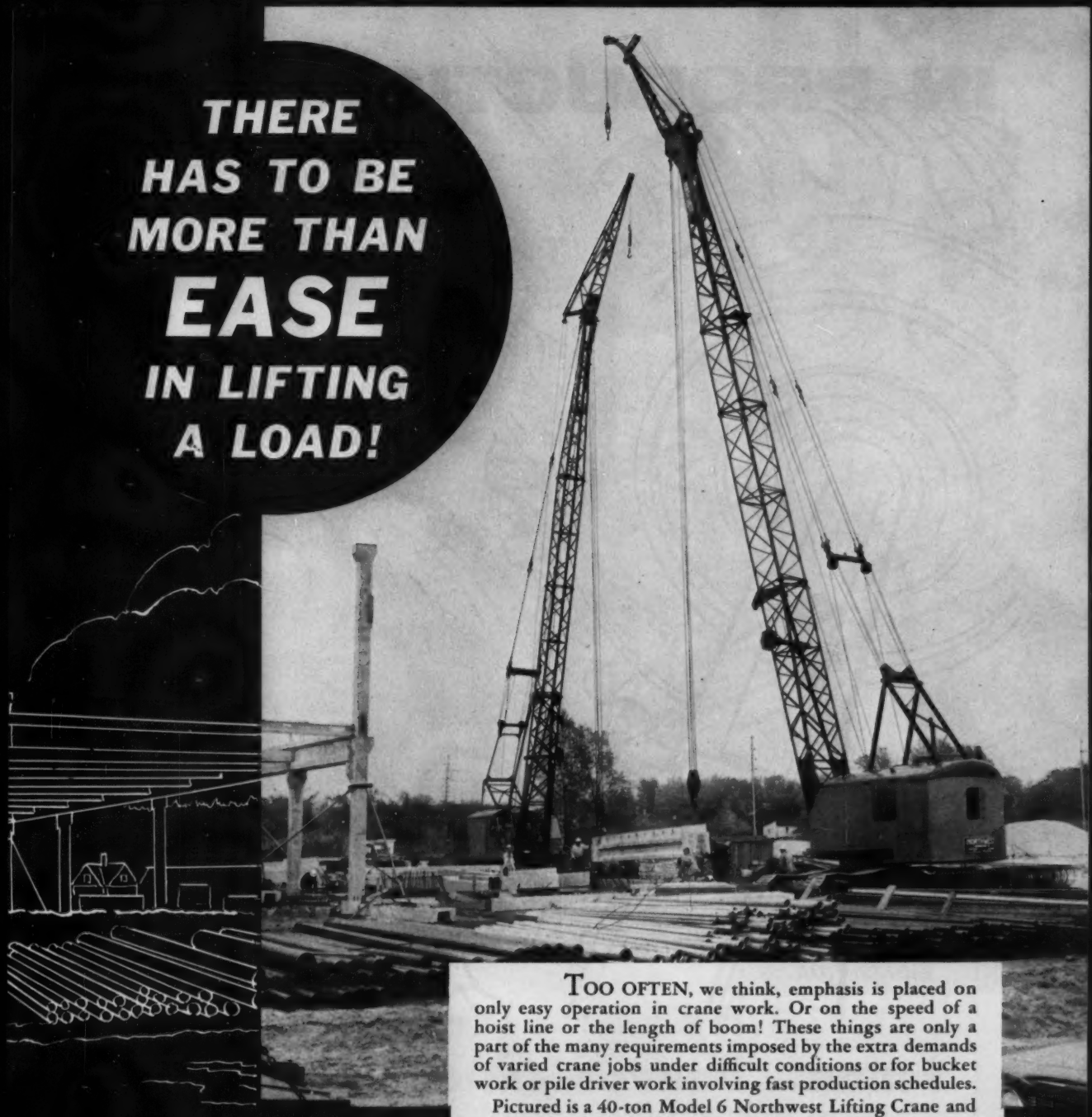
Circle 7 on Reader Service Card ➤

THERE HAS TO BE MORE THAN EASE IN LIFTING A LOAD!



TOO OFTEN, we think, emphasis is placed on only easy operation in crane work. Or on the speed of a hoist line or the length of boom! These things are only a part of the many requirements imposed by the extra demands of varied crane jobs under difficult conditions or for bucket work or pile driver work involving fast production schedules.

Pictured is a 40-ton Model 6 Northwest Lifting Crane and a 50-ton Model 95 Lifting Crane erecting an entirely precast structure. This was not a matter of weight. Either machine could have easily lifted the 23-ton pre-stressed beam. Here smooth teamwork accelerated the flow of the job, gave greater safety to the men on the structure and reduced the danger to the highly stressed beam.

Northwest Cranes fit themselves into jobs like this. Here the true "feel" of the load that comes with Power Feather-Touch Main Drum Clutch Control is highly important. The smoothness of the Northwest Independent High Speed Boom Hoist in hour after hour booming pays dividends. The positive velvet action of the Uniform Pressure Swing Clutches that gives you smooth swing where a jerk could wreck a beam means time and money.

These are just a part of the many Northwest advantages that get the job done faster. They are among the things that let you say, "That Northwest is always ready to go"— the advantages that make Northwest Cranes the finest machines of their kind.

NORTHWEST

CRANES • SHOVELS • DRAGLINES
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3/4 to 3 Cu. Yd. Capacity

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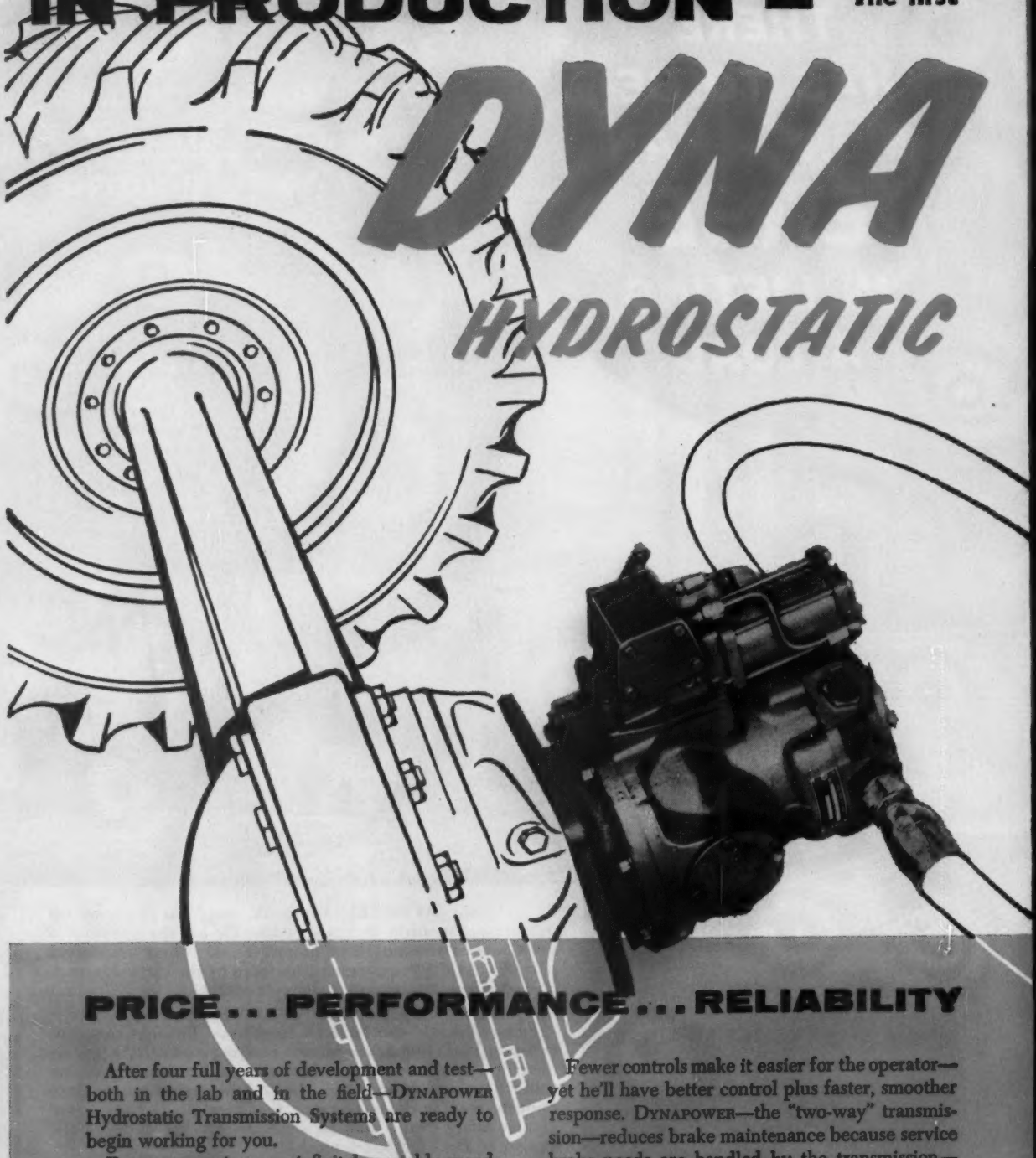

PRICE . . . PERFORMANCE . . . RELIABILITY

After four full years of development and test—both in the lab and in the field—DYNAPOWER Hydrostatic Transmission Systems are ready to begin working for you.

DYNAPOWER gives you infinitely variable speed—in either direction—and full torque—even at idle speeds—*without clutches or gear changers!*

DYNAPOWER-ed vehicles will perform more work faster because their torque/speed characteristics will be matched to the requirements of the job.

Fewer controls make it easier for the operator—yet he'll have better control plus faster, smoother response. DYNAPOWER—the "two-way" transmission—reduces brake maintenance because service brake needs are handled by the transmission—*hydrostatically.*

New DYNAPOWER hydrostatic transmission systems are available with controls to handle almost every need—in plant as well as vehicular. Transmission output can be governed with any of the

practical hydrostatic transmission systems for off-road vehicles

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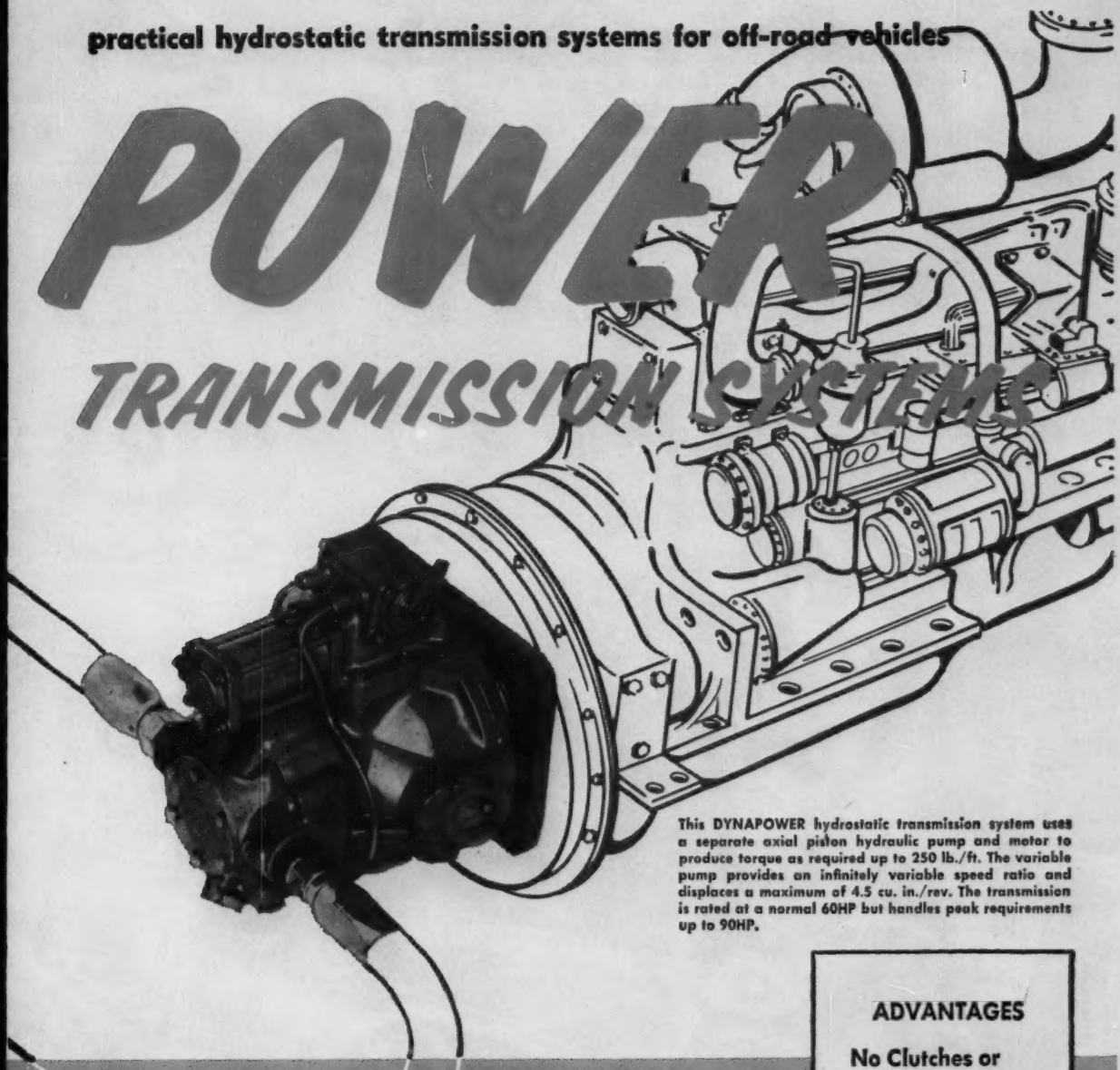

This DYNAPOWER hydrostatic transmission system uses a separate axial piston hydraulic pump and motor to produce torque as required up to 250 lb./ft. The variable pump provides an infinitely variable speed ratio and displaces a maximum of 4.5 cu. in./rev. The transmission is rated at a normal 60HP but handles peak requirements up to 90HP.

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following: manual control, hydraulic servo control, constant speed control, constant HP control, pressure compensator control, hydraulic servo control with pressure compensator override, temperature sensing control. DYNAPOWER hydrostatic transmission systems are ready to work for you.

ADVANTAGES

- No Clutches or Gear Changers
- Infinitely Variable Speed
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- Full Torque at Low Engine RPM
- Reduced Brake Maintenance
- Simplicity of Operation

To know more about DYNAPOWER, write to:

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B.F.GOODRICH TIRES MOVE ROCK FILL FOR COUGAR DAM.

Finished dam will tower 485 feet, stretch 1,600 feet, and slope from a base width of 1,500 feet to a crest width of 40 feet.

Six-mile reservoir will provide water resources for flood control, power production and public recreation. $50-million project is scheduled to take four years.

30 TONS OF ROCK CRASH onto B.F.Goodrich Rock Service tires. Tires work two shifts a day on scrapers, bottom dumps, rear dumps, water wagons, graders, rollers and mobile cranes. Yet it's not unusual for tires to be retreaded twice.

CONTINUOUS TIRE INSPECTIONS play a key role in keeping M-C&S' equipment on the go. The B.F.Goodrich Unified Contractors Program helps contractors save on all their rubber products—and protective clothing—requirements. Ask your BFG dealer to show you how this new program can help *you*.

B.F.Goodrich helps move a mountain to build a dam

B.F.GOODRICH ON-THE-SPOT SERVICE helps M-C&S get the most out of equipment. Tire changes seldom take longer than 15 minutes. BFG Servicemobiles carry all the latest power tools, are manned by tire experts.

12-MILLION CUBIC YARDS OF ROCK AND EARTH FILL RIDE TO $50-MILLION COUGAR DAM PROJECT ON B.F.GOODRICH TIRES

They're changing the topography of Oregon's Willamette Valley. Rock quarried from a knob high above the South Fork McKenzie River is taxied down a tortuous road by a fleet of giant earth movers. It will become part of the fill for Cougar Dam, a Corps of Engineers flood control project that will be the largest structure of its type in the Northwest.

Altogether, general contractor Merritt-Chapman & Scott Corp. will move 12-million cubic yards—every one on B.F.Goodrich tires. You'll find B.F.Goodrich Rock Service tires with Cut Protected compound hard at work here. BFG developed this compound for jobs like Cougar Dam, where upwards of 30-ton loads must be carried over hard, rock-surfaced roads. It takes a mighty big boulder to gash this compound, and if it should, there's BFG Flex-Rite Nylon cord construction to withstand the impact (and resist heat blowouts and flex breaks too). No wonder many Rock Service tires at Cougar Dam can be retreaded twice.

B.F.Goodrich on-the-job service plays a key role in keeping M-C&S equipment on the go. All 600 BFG tires are inspected regularly. Tire changes seldom take longer than 15 minutes. There is a BFG tire warehouse and shop less than a mile from the project. A BFG tire record system keeps the contractor informed of costs and helps control inventory.

Supplying contractors with longer-wearing tires and dollar-saving service is an everyday job for B.F.Goodrich. On many projects B.F.Goodrich supplies everything from tires to boots to belts through its new Unified Contractors Program. Whatever *your* need, it will pay you to talk to your B.F.Goodrich dealer. His know-how can make a big difference in your profit picture. Look him up under Tires in the Yellow Pages. *The B.F.Goodrich Company, Akron 18, Ohio.*

Specify **B.F.Goodrich Tubeless or tube-type tires when ordering new equipment**

B.F.Goodrich

Illustrated Catalog of Bearings for Caterpillar Engines

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Circle 12 on Reader Service Card

Construction News From Washington

Washington, D.C.
March, 1961

Contractors Face House ICBM Committee

Contractors working on ICBM bases defended the industry against charges of delays and excessive costs last month at a closed-door Congressional inquiry into the missile base construction program. They told the House Military Construction Appropriation Subcommittee that contractors have had no control over delays in building bases. They placed the blame for delays on the more than 4,000 change orders that have been made after contracts were awarded.

Representatives of some 20 major contractors also cited the change orders as the chief factor responsible for jacking up ICBM base costs. They said that such additional costs were "unascertainable when bids were invited." Several charged that progress has been slowed by "administrative difficulties"—the uncertainty over respective Air Force and Corps of Engineers' responsibilities for construction of ICBM sites.

One problem cited was the Air Force's insistence on approving the Corps' estimates of costs and time requirements for specification change orders. The contractors said the Air Force policy has generated delays.

The recent centralization of Corps of Engineers' management responsibilities under Gen. Welling's Ballistic Missile Office in Los Angeles has "improved" administration of the program, the contractors told the lawmakers.

The contractors also called upon labor unions to curb work stoppages resulting from jurisdictional labor disputes. They asked labor to develop "a greater sense of urgency" about missile base construction.

The subcommittee's intent was to determine whether work delays and excessive costs are hampering ICBM base construction. No conclusions have been reached.

Roadbuilding in '61 Will Set Record

Roadbuilding during the spring and summer construction seasons just ahead will boom. The dollar volume of all road construction for 1961 is expected to reach an all-time high of nearly $6 billion—not including right-of-way costs. The $6-billion estimate compares with last year's $5.5 billion and with 1959's record $5.9 billion for road construction, according to government figures.

Nearly one-third of the $6 billion will go into the massive Interstate System. Expenditures for other federal-aid highways are expected to reach $2.3 billion. About $300 million will be spent on non-federal-aid state roads and an additional $1.4 billion will finance local road and street construction.

Spending on federal-aid highways is likely to rise even higher than present estimates. Construction will be speeded so that there will be more work in the first half of this year than originally planned.

continued on next page

The prospect of an additional outlay of federal funds for roads arises from President Kennedy's pledge to see that the Interstate System, which has fallen behind schedule, is completed on time. This will require additional expenditures from the Highway Trust Fund. Congress soon will begin hearings on future financing for the Interstate System.

Chances for School Bill Are Bright

Congressional leaders think the chances of passing a school construction bill this year are very good. Last year the Senate and House each passed differing versions of a school construction bill, but the powerful House Rules Committee blocked a conference to iron out changes in the closing days of Congress. This session, the Rules Committee's power to block the Kennedy program has been curbed by the addition of more "liberal" members.

The House last year passed a construction bill by a margin of 17 votes. About 20 Democratic supporters were defeated for reelection, but President Kennedy stands to pick up more Republican support this year because there is no alternative administration bill. Moreover, the new Education and Labor Committee chairman, Rep. Adam Clayton Powell (D-N.Y.), hints strongly that he will not attach his anti-segregation amendment this year. This would garner a few more Southern votes.

The Kennedy bill calls for a five-year program of matching grants that would reach $660 million the first year and rise to $1.6 billion during the fourth and fifth years. This would make available an average of about $1 billion a year for elementary and secondary school aid. The bill includes an option for states to spend funds for either construction or teachers' salaries.

Last year, the Senate approved $900 million a year for two years for public schools, with the option that the money could be spent by the states on teachers' salaries. The House voted $325 million a year for four years and knocked out the salary option. The House is likely to disapprove the salary option again this year, in view of Speaker Sam Rayburn's opposition.

Kennedy Favors Public Power Development

The Kennedy administration, in its early days in office, is putting strong emphasis on federal power construction and planning. This is in marked contrast to the previous "partnership" policy of the Eisenhower administration, which had encouraged private systems to build and operate power facilities for the federal government.

The number of new construction starts that will be allowed under President Kennedy's public works appropriation bill for the coming fiscal year awaits congressional approval. However, Interior Secretary Steward Udall already has laid out broad policies for power development during the next four years, and these policies favor public development of power sources.

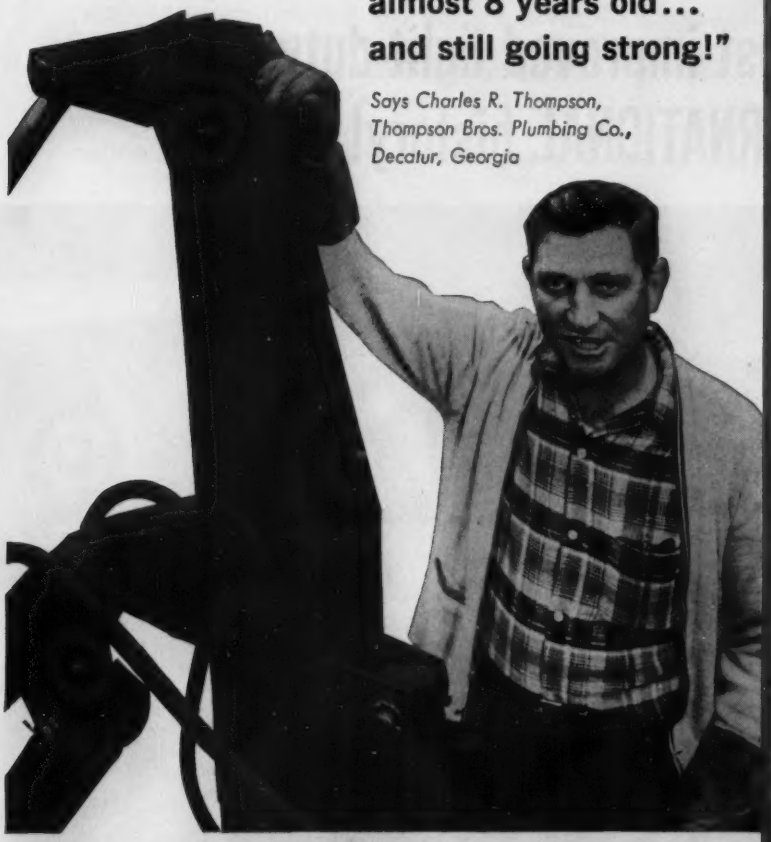
President Eisenhower had urged power companies to move into the area of federal development to build and operate the government's power facilities. President Kennedy is expected to ignore the private companies to a large degree.

Old Shermans Sell New Shermans

The old...

"This Sherman is almost 8 years old... and still going strong!"

Says Charles R. Thompson, Thompson Bros. Plumbing Co., Decatur, Georgia



"We bought our first Sherman in 1953. When business grew, we bought another. From the first day we had them, both Shermans have been in constant use—at any given time we have about 20 jobs in progress—requiring only minimum maintenance to keep them running in equal-to-new condition. By now, our two Shermans have delivered a total of more than 11 years continuous service, amounting to more than 33,000 operating hours, in some of the toughest imaginable situations. They seem to be indestructible... we figure to keep on using Sherman products."

Why not find out what Sherman can do for you? See your Ford dealer... Check the yellow pages or write to Allied Equipment, Ford Motor Company, 2500 E. Maple Rd., Birmingham, Michigan.

SHERMAN

POWER DIGGERS • LOADERS • AUXILIARY TRANSMISSIONS

And the New...

SHERMAN BOBCAT DIGGER

Compact, maneuverable 8' or 10' digger for light budgets, tight spots—cemeteries, inside work—or where light weight is necessary.

SHERMAN PANTHER DIGGER

Big and fast, with typical Sherman dependability . . . 12' digging depth, 188° swing, exclusive filter gauge, much more for high production, low maintenance.

SHERMAN MAJOR DIGGER

Here's a perfect pair—match Sherman's durability, dig-ability with Fordson's rugged diesel economy. 12'digging depth.

ALSO...

12 speeds instead of 4—For more power, more economy, equip your 4-speed Ford tractor with the Sherman 12-speed combination step up—step down transmission to exactly match power and speed to every job. Or, for fast shuttling, install a time-saving Sherman reversing transmission.

Circle 15 on Reader Service Card

New International® Trucks

The most-improved light-duty models in INTERNATIONAL history!

Leading the field is the new INTERNATIONAL model C-120(4x4), 7,000 lbs. GVW. This new all-wheel-drive is practically the same height as regular models, now has single stick shift for power dividing transfer case. Shown here with unique Travelette cab, room for 6 men plus 6-ft. pickup body.

7 times better to meet your truck needs

1. Overall height of new INTERNATIONAL models is up to 5 inches lower without sacrificing ground clearance or cab room.

2. Choice of new independent torsion-bar front suspension or I-beam front axle with leaf-type springs for more driver comfort and greater load protection.

3. New hydraulically-assisted clutches in all models ease shifting effort, and also reduce linkage and maintenance.

4. New rigid box section frames or sturdy channel frames take any punishment in stride.

5. Wheelbases are 5 inches longer to improve the ride and give better angle of approach and departure.

6. New contoured grille and restyled sheet metal with sloping hood give you a new look, king-size visibility.

7. Seven regular models with GVW ratings from 4,200 to 8,800 lbs.—plus the special new model C-100—present a complete light-duty line-up.

Stop in today at your INTERNATIONAL Truck Dealer or Branch for the whole story. Drive and price the new INTERNATIONAL light-duty models.

Your most reliable worker can be a new INTERNATIONAL with standard pickup body. Sand-tight box with sturdy all-steel construction throughout. Ribbed floor lessens the friction when loading or unloading. Body lengths of 7 and 8½ feet. V-8 engine power is standard, "sixes" and more powerful V-8 optional. All-wheel-drive models available—let you go anywhere, anytime.

INTERNATIONAL® TRUCKS IH®

WORLD'S MOST COMPLETE LINE

International Harvester Company, Chicago • Motor Trucks • Crawler Tractors
Construction Equipment • McCormick® Farm Equipment and Farmall® Tractors

LUBE LOGIC Five tips to

How to return stored engines to service

In a previous issue of Lube Logic we gave you an 11-point program designed to protect gasoline and diesel engines during long idle periods. Now we'd like to finish what we started by describing the routine for taking engines *out* of storage and putting them back into action.

1 Where Texaco Rustproof Compound L has been applied to exterior of engine, remove with kerosine.

2 Remove waterproof paper and tape from all openings.

3 Remove spark plugs. Clean them and check the gap settings before replacing.

4 Remove distributor cap and clean Texaco Rustproof Compound L thoroughly from lobe of breaker cams. Replace cap.

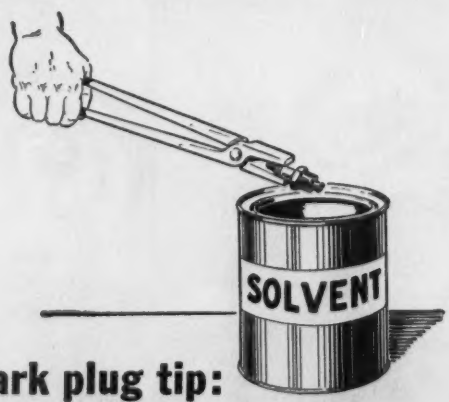
5 Check the level of the crankcase oil. If it's at the full mark, there's no need to drain the oil before operating the engine unless it requires a different grade. If the oil has fallen below the full mark during storage, drain the engine and locate the oil leak, and repair it, then refill with the proper grade of oil, before operating the engine. The first oil change after the engine is back in service should be made in half the usual period.

6 Check the cooling system for leaks, and add water or Texaco PT Anti-Freeze if necessary. It's not necessary to drain and flush if the cooling system was filled with a rust-inhibited anti-freeze before storage.

7 Fill the fuel system, start the engine, and let it run for a while. Check the oil pressure, and check for overheating and oil and fuel leaks.

End-of-shift is the best fueling time

They say there's a time and a place for everything, and for refueling equipment the best time is at the end of each day's work. And here are two reasons why. End-of-shift minimizes the possibility of fuel-tank rusting, because there's no room for condensate to form in a tank that's full of gasoline or diesel fuel. And tank-bottom sediment, stirred up by pumping in fuel, has a chance to settle down overnight, so it won't be drawn into the fuel line.

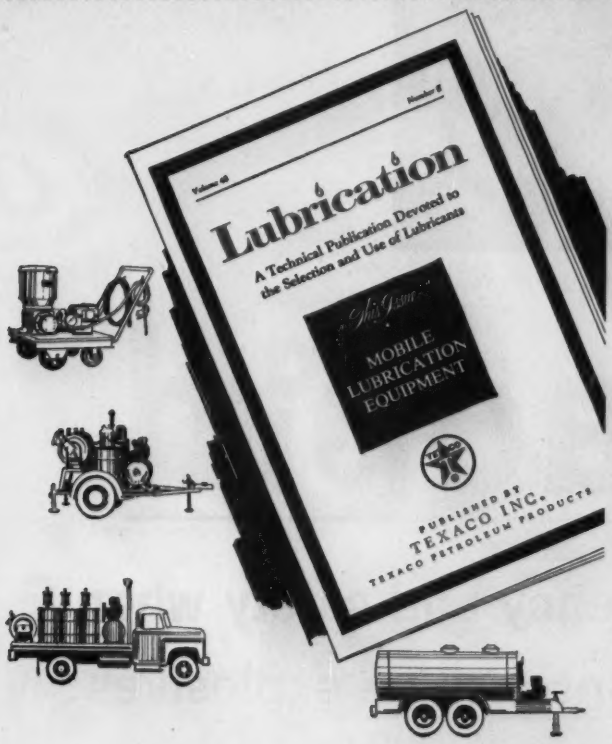


Spark plug tip: Degrease before you blast

Don't depend on your spark plug cleaner to do everything. As a matter of fact, you can actually make things worse by blasting an oil-fouled plug. Heavy oil deposits on the plug will pick up the abrasive and hold it in the recesses between the shell and the insulator. Result: burning and ultimate failure because these deposits can seriously affect the spark plug's ability to dissipate heat at high engine speeds.

Moral: degrease oil plugs in a suitable solvent and dry them *before* you blast.

prolong equipment service life

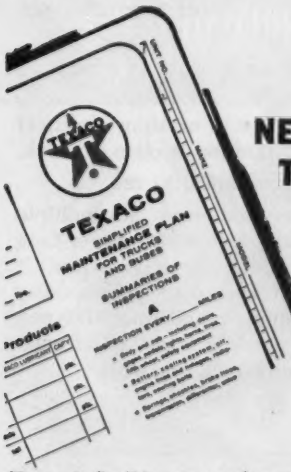

Lubrication
A Technical Publication Devoted to the Selection and Use of Lubricants
MOBILE LUBRICATION EQUIPMENT
PUBLISHED BY TEXACO INC.
TEXACO PETROLEUM PRODUCTS

The whole truth about mobile LUBE RIGS

- What good lube rigs are made of—the products and the dispensing equipment.
- How to use lube records to make your rig more valuable.
- Special purpose lube rigs.
- Pros and cons of mobile and centralized lubrication.

What does it take to make a mobile lube rig? What do you put on it? How do you use it? The questions have been coming in so fast lately that Texaco has devoted a whole issue of its magazine, *Lubrication,* to answering them: the March 1960 issue, titled "Mobile Lubrication Equipment."

Lubrication is a major factor in cost control, and lube rigs can be a major factor in thorough maintenance, so send for your free copy of the March *Lubrication.* Supply of these valuable booklets is limited, so if you want one, send in your request *now* to Texaco Inc., 135 East 42nd Street, New York 17, N.Y., Dept. CM-12.



NEW TRUCK RECORD FOLDER fits itself into your schedule

Texaco's flexible new truck record folder lets you stick to the lube schedule that works best for you without running into bookkeeping problems. Lubrication and oil schedules are completely separate from mechanical maintenance and replacement parts schedule—you don't have to follow any pre-established routine to use the folder profitably. And this new folder accounts for every single dollar you spend on truck maintenance for a whole year. Get yours now.

Tune In: Texaco Huntley-Brinkley Report, Mon. Through Fri.-NBC-TV

TEXACO LUBRICATION ENGINEERS

Every now and then we'll bring you a batch of "sleepers," little angles, so easy to overlook, where big savings in money and time can be made. If Lube Logic doesn't solve your problems, call your local Texaco man. Anytime, all the time, he's your best source of money-saving lubrication ideas. Don't forget that "Lubrication is a major factor in cost control." Texaco Inc., 135 East 42nd Street, New York 17, N. Y.

TEXACO

Throughout the United States
Canada • Latin America • West Africa

Primacord®

for maximum efficiency and safety when blasting with cap-insensitive explosives

Adequate priming is essential for maximum explosive performance and blast results when using prill-oil mixtures, nitrocarbonitrates or any other type of cartridged or bulk *cap-insensitive* explosives. Accordingly, explosives manufacturers have developed a variety of special, high-strength primers and, in all instances, these special primers are designed so they can be used with, and detonated by, Primacord Detonating Fuse.

This combination of cap insensitive explosives, special primers and Primacord, provides maximum economies, safety, plus other advantages for the majority of open pit, quarry and construction blasting. The use of many millions of feet of Primacord over the years has proved its great number of advantages.

1. Detonates at a speed of almost four miles per second along its entire length.
2. Has a minimum initiating strength of a blasting cap along its entire length.
3. Cannot be set off by sparks or stray electrical currents—or by normal vibration, friction or shock.
4. Is simple, easy, and economical to use.

Used as a downline, Primacord simplifies multiple priming and/or deck loading techniques. Saves time and labor costs when loading. As a trunkline, it connects all holes for instantaneous or surface delay initiation. Available in standard and special types, developed to meet varying needs. For further information, consult your explosives supplier or write

THE ENSIGN-BICKFORD COMPANY
Simsbury, Connecticut • *Since 1836*
THERE IS A TYPE OF PRIMACORD® FOR EVERY TYPE OF BLASTING

Free! NEW GUIDE AND CONDENSED MANUAL: "PRIMACORD DETONATING FUSE...WHAT IT IS... HOW TO USE IT." ASK YOUR EXPLOSIVES MANUFACTURER OR WRITE US GIVING YOUR COMPANY NAME.

Circle 20 on Reader Service Card

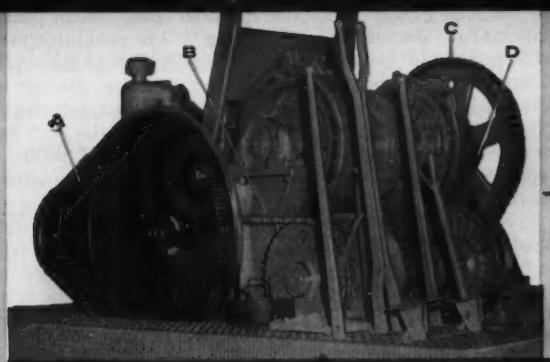
major equipment manufacturers *specify*

DIAMOND roller chain

DIAMOND-POWERED "QUICK-WAY"

18-ton crane sets 20,000 gallon fuel tank.

NEW "QUICK-WAY" TRUCK-SHOVELS get full-time pull power with DIAMOND roller chain!



New "QUICK-WAY" Truck-Shovels and Cranes from 15 to 25 tons capacity use multiple and single strand DIAMOND Roller Chain for maximum pulling and hoisting power and smooth, more reliable operation.

DIAMOND Roller Chain transmits power from engine to jackshaft (A), to swing-shaft (B); provides pull power for main hoist (C), boom hoist (D) and haul-back.

Your DIAMOND Distributor has all types and sizes of roller chains in stock for immediate delivery. See the Yellow Pages of your telephone directory under "Chains", or "Chains, Roller" or write the factory for Catalog and address of your nearest DIAMOND Distributor.

DIAMOND ROLLER CHAINS

DIAMOND CHAIN COMPANY, INC. | A SUBSIDIARY OF AMERICAN STEEL FOUNDRIES | DEPT. 418 • 402 KENTUCKY AVE., INDIANAPOLIS 7, IND.
Offices and Distributors in All Principal Cities

Circle 21 on Reader Service Card

. . . and for

NEARBY SERVICE

on B&D tools

Black & Decker maintains 50 factory service branches plus authorized repair stations to give your B&D tools the attention every mechanical product needs periodically. Keep your B&D tools in top condition, on the job all the time.

Only factory parts and factory-approved methods are used. Fast service and reasonable cost, always.

SWIFTY SERVICE says be sure to ask about:

FREE TOOL INSPECTION no cost, no obligation.

STANDARD B&D GUARANTEE after completion of all recommended repair work.

You'll find the location of the nearest B&D repair facility in the Yellow Pages under "Tools-Electric," or write for address to: THE BLACK & DECKER MFG. Co., Dept. 2203-S, Towson 4, Md.

50th YEAR

Black & Decker

Quality Electric Tools

Circle 22 on Reader Service Card

Job Talk...

Modified Grader Is High-Production Heater-Planer

By mounting an array of attachments on a Caterpillar No. 14 grader a Little Rock contractor built a heater-planer that achieves high production rates while stripping asphalt pavement prior to resurfacing.

Planing specialist James A. Jackson devised the rig for resurfacing subcontracts on two Air Force projects. At Ellsworth AFB, Rapid City, S. D., the machine removed more than 100 tons of 4-in.-thick asphalt pavement per hr. At Truax AFB, Madison, Wis., it planed a ¼-in. seal coat at an average rate of 5,400 sq yd per hr.

The modified grader weighs about 25 tons, is 43½ ft long and has operating speeds up to 125 fpm. A furnace mounted below the grader is 8½ ft long, 8 ft wide and 4½ ft high. It is lined with a Lite-Cast castable that reflects heat onto the pavement surface. Six proportioning burners provide heat. A turbo blower with a capacity of 950 cfm provides air.

Steel cutting edges (see photo) mounted at the rear of the furnace shear off the planed material. Mounted in a V-shape, the blades windrow stripped material at the center of an 8-ft-wide cut. A hydraulic loader picks up the stripped material and feeds it to a belt conveyor that loads a dump truck towed by the planer.

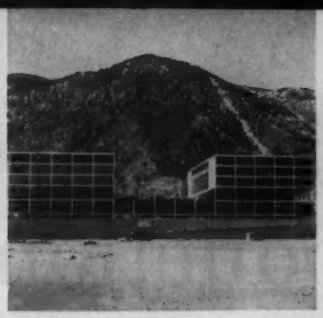
A novel setup feeds steady input to a 15-kw generator mounted on the side of the rig. A power takeoff from the grader engine runs the generator, which supplies power to operate the attachments. Two variable pitch pulleys (see photo) actuated by motor take care of the changing rpm output of the power takeoff. If the generator's rpm's go below a preset range, a speed sensitive switch automatically cuts in the actuating motor, which changes the ratio of the pulleys enough to increase input to the generator.

Jackson plans to incorporate additional features in the heater-planer for future jobs. A vacuum cleaner will pick up fine dust that sometimes remains after planing very dry pavement. A spray bar will apply a fog of asphalt to stripped pavement when resurfacing will be delayed.

continued on page 27

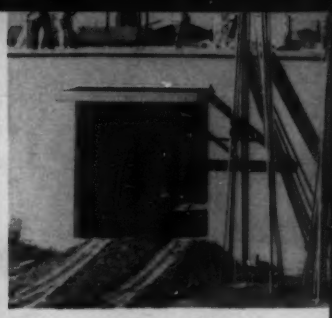
Circle 23 on Reader Service Card ➤

New Senate Office Building
Washington, D. C.



U. S. Air Force Academy
Colorado Springs, Colo.

Missouri River Bridge
St. Charles, Mo.

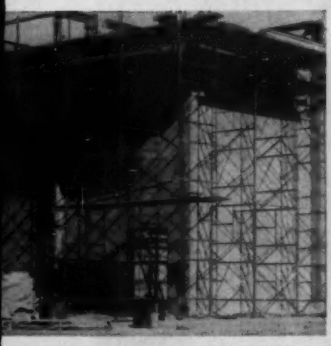


Chennault Air Force Base
Lake Charles, La.

Bissonet Plaza
New Orleans, La.

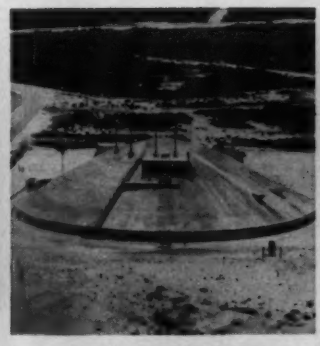
On the job at the TOP TEN!

Football Stadium
Indiana University

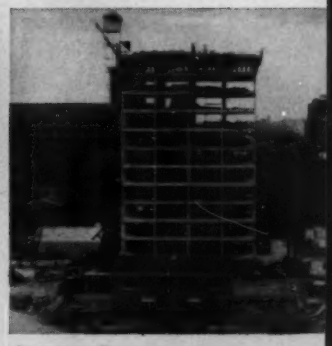


Minot Air Base Project
Minot, N. Dakota

Route #15 Bypass
Amity Hall, Pennsylvania



Cape Canaveral Missile
Center, Cocoa, Florida



Glenwood Redevelopment
Project,* Minneapolis, Minn.

America's top construction jobs pick world's toughest saw, Black & Decker

From coast to coast . . . under roughest field conditions . . . leading contractors and builders specify Black & Decker Saws. Why? For better control in the wood. For dependable operation.

*Courtesy Minneapolis Star & Tribune

For solid all-round performance and more board feet per day. Black & Decker Saws turn out the work fast with less downtime. A trial on the job will convince you! Write for free demonstration!

For sales or service, look in the Yellow Pages of the telephone book under . . . TOOLS ELECTRIC

Black & Decker
WORLD'S LARGEST MAKER OF POWER TOOLS

THE BLACK & DECKER MFG. CO., Dept. 2203
Towson 4, Md. (In Canada, Brockville, Ont.)

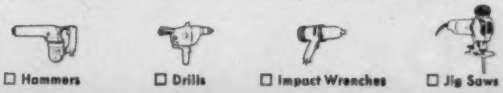
☐ Arrange a free demonstration of the world's toughest saws.
☐ Send additional information on_____

Name_____ Title_____

Company_____

Address_____

City_____ Zone___ State_____



☐ Hammers ☐ Drills ☐ Impact Wrenches ☐ Jig Saws

World's largest copper mine speeds production with world's strongest, longest wearing grader blades

P & C

PACAL X-TRA EDGE BLADES

The new Pacal X-Tra Edge Blades wear two and a half times longer than any blades previously used by Western Contracting in mining development work for Kennecott Copper Corp., Bingham Canyon, Utah.

Pacal X-Tra Edge Blades are heavier, stronger . . . wear longer . . . stay sharper . . . offer less waste per hour of work. The steel in Pacal Blades is rolled to an exact analysis. The correct amount of each element is included to give you the best combination of wear and strength. Pacal X-Tra Edge and "Dig-in" End Blades give you more steel on the wearing edge and reduced waste and down time. Write or CALL PACAL!

Pacal Heat Treated Plow Bolts will not loosen or stretch. Heads will not wear off. This extra strength and longer life is necessary when long wearing Pacal X-Tra Edge Blades are used.

Western Contracting use ⅜" to ⅞" x 8" Pacal X-Tra Edge Blades. Outwears ordinary blades up to 6 times.

Available in ½" to ¾" x 8". Either size can be used in two or three piece arrangement.

Pacal Dig-In End Blades work easier, wear longer, cut costs in dozer operations.

All steels furnished by Pacal made in U. S. A.

PAPER, CALMENSON and Company

2504 West County Road B • St. Paul 13, Minnesota • Telephone MIdway 6-9456

Branches in Duluth, Minn. and Billings, Mont.

Circle 25 on Reader Service Card

Circular B-82

Only eight hours transmission downtime per unit in approximately 2700 hours of operation over a period of 2½ years averages out to

99.71% AVAILABILITY!

A. F. Keyes Co., Inc., South Milwaukee, Wisconsin, is using Fuller 5-G-1520 5-speed Transmissions in four Le Tourneau-Westinghouse Scrapers on construction projects in southwestern Wisconsin. None of the four units has had more than eight hours of transmission downtime—and each has logged more than 2700 hours of operation.

Two of Keyes' L-Ws are Model B Full Packs, and two are Model B BM-2s. The constant-mesh, spur-gear Fuller 5-G-1520s feature, as standard equipment, the Fuller air-actuated countershaft brake, which permits quick, easy up-shifts without double clutching. Also standard on the 5-G-1520 is the Fuller pressure lubrication and filtration system, which keeps gear oil clean, provides longer gear and bearing life and increases availability for your operation.

Bernard Schuh, Chief Mechanic for Keyes, says, "We're extremely pleased with both the performance and reliability of the Fuller 5-G-1520 Transmission. If you buy a good piece of equipment and take care of it, it's going to perform profitably for you. And that's certainly the case with the Fuller Transmissions in our LeTourneau-Westinghouse Scrapers."

FULLER TRANSMISSION DIVISION

EATON MANUFACTURING COMPANY

KALAMAZOO, MICHIGAN

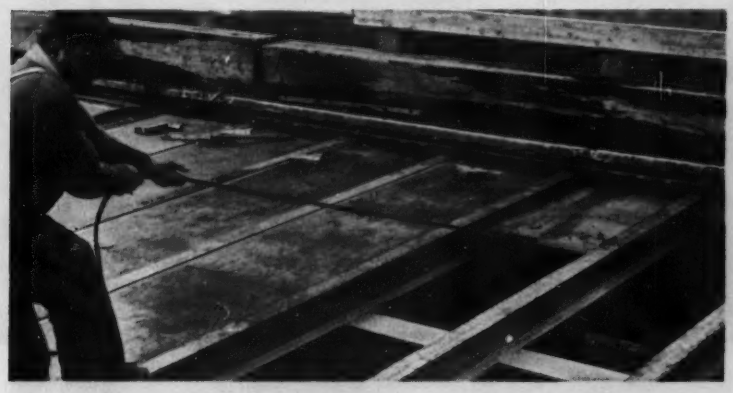
Sales & Service: West. Dist. Branch, Oakland 6, Cal. • Southwest Dist. Office, Tulsa 3, Okla. • Automotive Products Co., Ltd., Brock House, Langham St., London W.1, England, European Rep.

Circle 26 on Reader Service Card

Dozer with 45-ft Blade Clears Wide Swath of Snow

A winter that brought the biggest snows in years didn't phase the contractor with the job of clearing hangar approaches and arrival areas at New York International Airport. Owner Edwin Duryea of D & R Construction Co., Roosevelt, Long Island, had on hand a fleet of snow-removal rigs fitted with blades up to 45 ft long.

One of the Cat D8's with a 45-ft bulldozer blade can push as much as 40 cu yd of snow in a single pass. The king-size blade is made up of five conventional 9-ft blades welded together and braced by pipe diagonals connected to the dozer trunnions. A dolly with a 6-in. solid rubber tire mounted behind the blade near each end helps support the long blade and prevents it from digging into pavement during plowing.



Sliding Forms Cut Cost of Bridge Redecking

Sliding forms saved an estimated 15 days of forming time for Munroe-Langstroth, Inc., of Norwood, Mass., who redecked a 37-yr-old bridge across the Piscatauqua River between Maine and New Hampshire.

After stripping the old 5-in.-thick concrete deck slab with pavement breakers, the contractor poured the new deck in two 15-ft-wide strips. Transverse 7-in. I-beams at 2½-ft centers set atop five longitudinal stringers support the 30-ft-wide deck of the 900-ft-long truss bridge.

Munroe-Langstroth took advantage of the unbroken, unobstructed length of the floor beams in the forming plan. They formed one lane of the deck with 15-ft-long plywood panels cut just wide enough to ride the flanges of the floor beams. Three 2x4's stiffened each panel. Panels were wedged tightly in place underneath the top flanges of the floor beams.

After the first lane was poured, carpenters pulled the forms by removing the wood wedges. The panels dropped onto the bottom

continued on page 32

16 MODELS of FULLER 3-SPEED AUXILIARIES

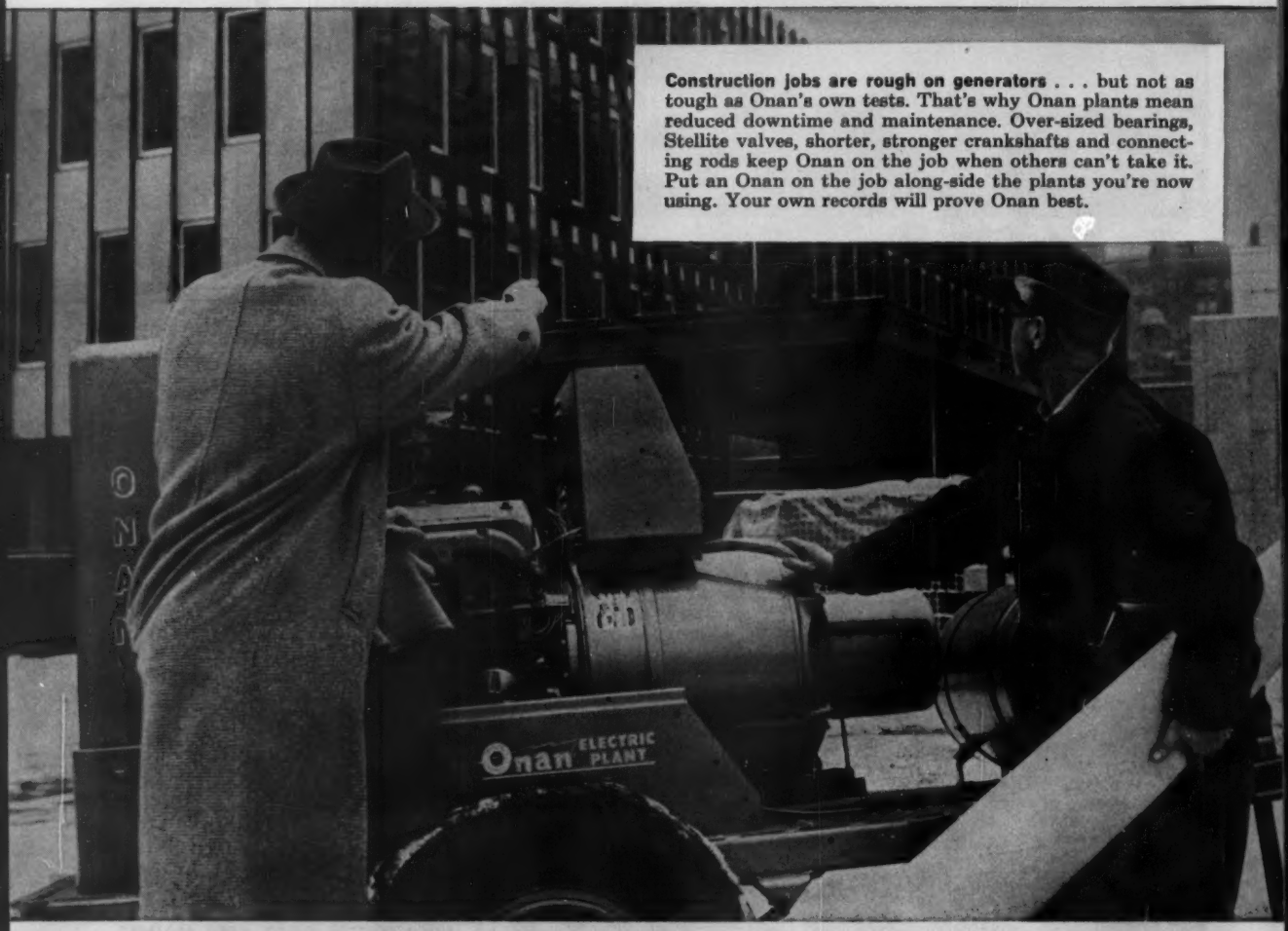
Specify **FULLER...**
Specify the **MODEL**
Get the 3-speed auxiliary designed for your job.

HIGH CAPACITY . . . WIDEST RANGE OF RATIOS . . . OPTIONAL TOP-MOUNTED POWER TAKE-OFF . . . LOW INITIAL COST, LESS MAINTENANCE . . . AVAILABLE FROM ALL LEADING TRUCK MANUFACTURERS ON SPECIFICATION

Specify the MODEL
Choose from 16 Models of FULLER Three-Speed Auxiliaries

FULLER TRANSMISSION DIVISION
EATON MANUFACTURING COMPANY
KALAMAZOO, MICHIGAN
Circle 27 on Reader Service Card

Beefed up for hardest



Construction jobs are rough on generators . . . but not as tough as Onan's own tests. That's why Onan plants mean reduced downtime and maintenance. Over-sized bearings, Stellite valves, shorter, stronger crankshafts and connecting rods keep Onan on the job when others can't take it. Put an Onan on the job along-side the plants you're now using. Your own records will prove Onan best.

Stellite coated exhaust valves and valve seats. One of toughest alloys known. Gives you up to 300% longer valve life than uncoated valves. It's the important details like this that make Onan more economical in the long run.

Exacting standards govern manufacture—years of specialized experience and extensive testing facilities control the quality of Onan Power Plants. Over 1000 different types and sizes of plants are produced by Onan.

use...even abuse

Onan electric plant still delivers full power after 12,197 hour test—equal to 487,888 miles

A grueling endurance test that lasted one year, nine months and 12 days could not stop Onan test plant #1068. Onan engineers used this production-built unit for an endurance run—and after it was all over, it still generated the full rated power promised on the nameplate. Proof that Onan's exacting standards and production testing give you a power plant with long, dependable life built in.

Over 1,700 other endurance units have been run by Onan engineers. In these tests every design feature and part has to prove itself before it can become a part of the Onan you buy. In addition, every type and size Onan plant is tested under all operating conditions which could conceivably affect performance on your job.

Hours of running in and testing under full load are given *every* Onan before it is shipped. An independent testing laboratory then spot tests Onan Plants that have already been tested by Onan—double assurance that every Onan will deliver its full nameplate rating. Only then does an Onan production run qualify for Performance Certification.

Buy *proven performance* when you buy an Electric Plant. See your authorized Onan distributor or dealer. You can depend on him for a lifetime of factory parts and service. He's listed in the Yellow Pages.

ONLY ONAN GIVES YOU THIS CERTIFICATION

Onan
Onan
PERFORMANCE CERTIFIED
We certify that when properly installed and operated this Onan electric plant will deliver the full power and the voltage and frequency regulation promised by its nameplate and published specifications. This plant has undergone several hours of running-in and testing under realistic load conditions, in accordance with procedures certified by an independent testing laboratory.

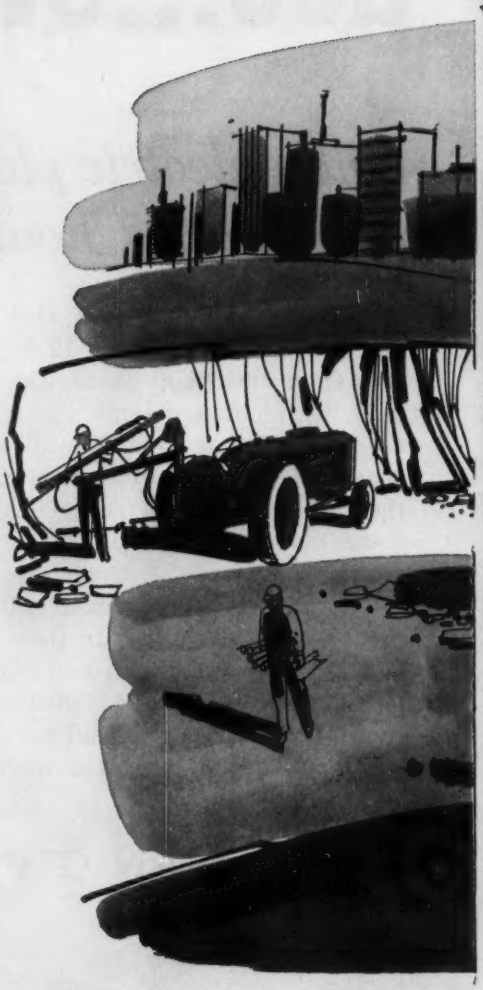
World's Leading Builder of Electric Power Plants

ONAN DIVISION, STUDEBAKER-PACKARD CORPORATION • 2557 UNIVERSITY AVE. S. E., MINNEAPOLIS 14, MINNESOTA

now...schedule more savings with planned task forces of

SCHRAMM

CO-ORDINATED AIR POWER



For man-sized savings, take a look at your total air picture . . . Patchwork purchasing can give you too much and too little compressor equipment at the same time. You end up with many different, specialized types, old, inefficient units, too many sizes . . . maybe the "wrong" sizes, simply because they lack certain attachments. The result is a hodge-podge of equipment . . . which costs too much to run, takes too much manpower to handle, is too much to maintain.

Take a hard look at your air power picture as a whole. SCHRAMM has done exactly that. Planned and built an entire line to work together . . . waste has been designed out. Equipment which complements, does not duplicate the work of other equipment. From the smallest compressor to the largest drill rig, you get more jobs done per piece of equipment. You spend fewer man-hours on each job . . . better profit margins on *every* job.

It will pay you to consider a SCHRAMM task force of co-ordinated air-power equipment. The first SCHRAMM product you put to work will prove itself. With each additional SCHRAMM unit, you automatically schedule savings, pyramid profits.

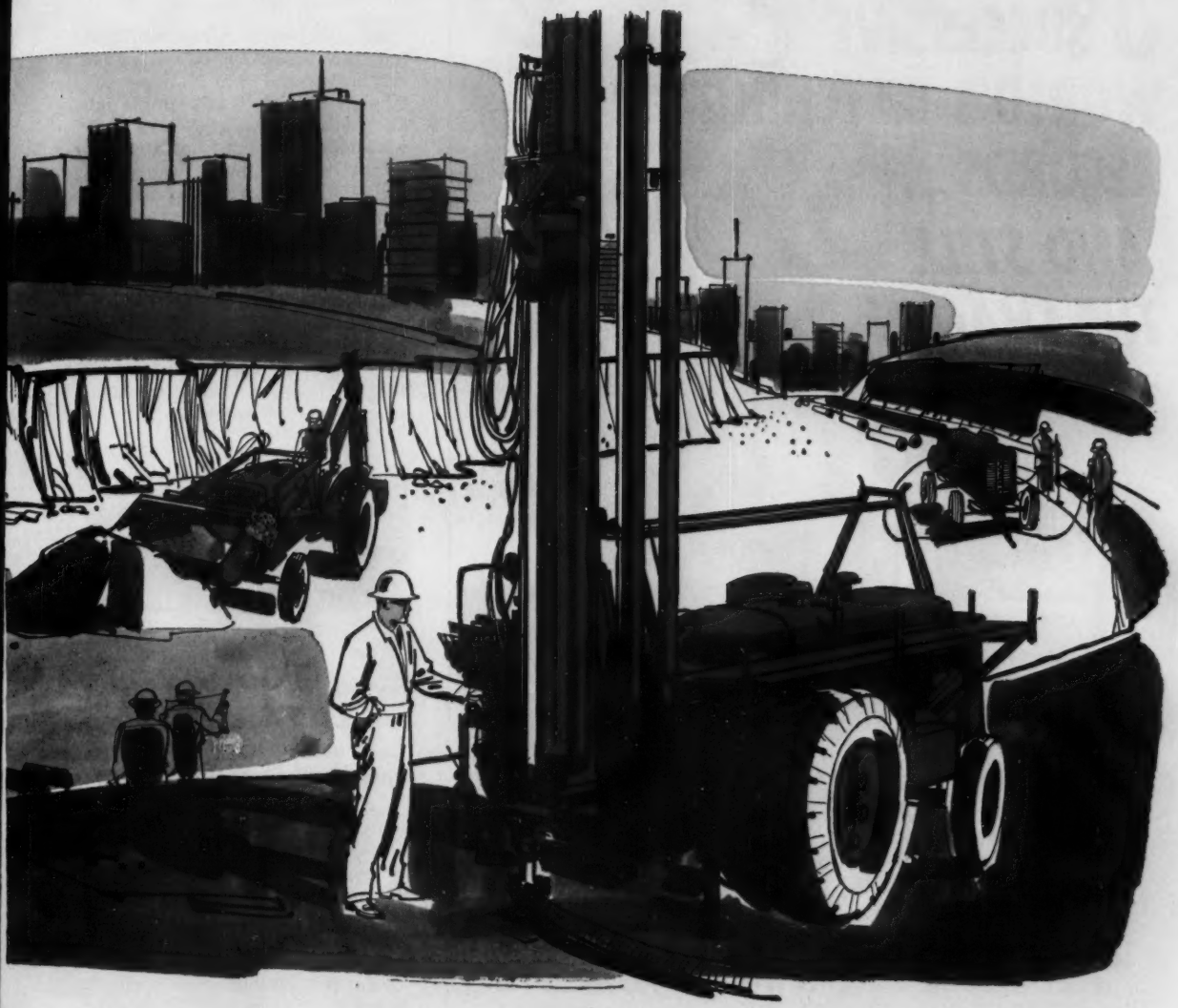
Save as you buy . . . with the only complete line of co-ordinated air-power products in industry. Talk to your SCHRAMM dealer. Or write for the new booklet describing the advantages to you of co-ordinated Air Power. SCHRAMM, Inc., 604 North Garfield Ave., West Chester, Pa.

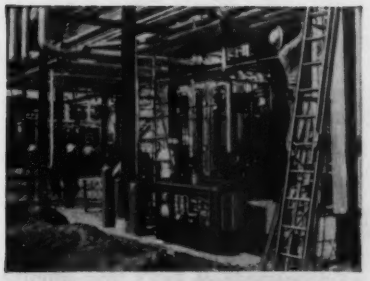
SCHRAMM
CO-ORDINATED AIR POWER

Portable Compressors save you up to 35% initial cost on 125 cfm compressors, comparable savings on every size from 20 cfm to 600. You also save 15 to 50% fuel consumption . . . get more air per unit of fuel. Air is hotter, you get more work per foot of air . . . tools operate at full capacity. Others use 40 gal. of oil to cool air. SCHRAMM uses none!

Pneumatractor **Self-propelled Compressors** cost less than comparable compressors and tractors combined! PNEUMATRACTORS drive along with work. No trucks, crews tied up. With STANDARD or MODEL 250 PNEUMATRACTOR, one man can break out concrete, tamp, drill, any job with air. With HEAVY PNEUMATRACTOR, same man can dig, grade, fill.

Rotadrill **Rotary Drill Rigs** cost less too. With extra savings on PNEUMATRACTOR ROTADRILL that has built-in compressor to replace separate crawler drill and compressor. Costs less, does same job as crawlers that use 315 or 600 cfm compressors. On ROTADRILLS, one man can do drilling job, change steels, drive from hole to hole.





Hi-Pressure Compressors are exclusive with SCHRAMM! Vital for jobs which require higher than normal pressures, such as testing small-diameter pipe lines. Units are dual purpose—can be used at normal pressures for regular work or at high pressures: 60 cfm at 500 psi; 200 cfm at 250 psi; 400 cfm at 250 psi! Available wheel or skid mounted.

Booster Compressors are the ideal package for the high-pressure, high-capacity air jobs such as major pipeline testing. Four basic units can be used individually or in combination to provide pressures ranging from 275 to 1500 psi, handling volumes from 600 to 1800 cfm. As with all Schramm equipment, you can buy or rent.

Circle 31 *on Reader Service Card*

Construction Tools are mass produced to offer low initial cost for rock drills, breakers, clay spades, tampers and others. Combined with SCHRAMM Compressors, you get more air at the tool. More work is done. They provide faster operating speeds, lower up-keep costs, lower air consumption. All are made from drop forgings to give extra guts.

3 SUCCESSIVE WORLD'S BATCHING RECORDS... AND STILL THE CHAMP!

The
BUTLER TX-4 Roadbuilders Plant

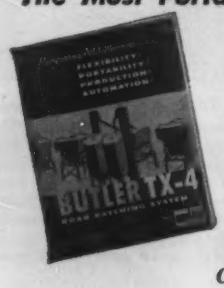
World's Records for highway batching were made with the BUTLER TX-4 in 1958, 6,029 lineal feet; in August, 1960, 7,250 feet; and again in the same month, 8,036 feet. All laying slab 24 ft. wide and 9 inches thick. And all by Denton Construction Co., Michigan.

That's mighty conclusive proof of the profit-making superiority of BUTLER Automation. The TX-4 can be completely actuated by the truck drivers themselves, or if required, by only one operator.

And the TX-4 is so scientifically accurate, so completely error-proof and trouble-free it *could* act as its own inspector.

Perhaps you don't need such a high-level of production. The TX-4 will exactly match your batching needs for one, two, three, four (or more) pavers. It's just a matter of the number of batchers for your contract requirements.

The Most Portable of All...



All components—bins, batchers and structural members are unitized for easy handling and transport. All wiring and piping are in place, ready for instant hook up. You'll want a complete description to know how the TX-4 will fit perfectly into your jobs, so send for the new TX-4 bulletin now — and get ready for a bigger profit this year.

BUTLER BIN COMPANY

949 Blackstone Ave. • Waukesha, Wis.

Circle 32 on Reader Service Card

JOB TALK . . .

continued from page 27

flanges of the floor beams. Then the crew pulled the panels across the bridge and into place on the other lane. This was a simple job for a workman on top of the deck who pulled on a light line attached to a nail in the form. The panels slid along the lower flanges of the floor beams, which served as rails.

Designers specified welded wire fabric reinforcing for the new deck slab, and this helped cut the contractor's labor costs, too. Instead of placing reinforcing bars individually as in the case of the old slab, steelworkers laid 7¼x 10½-ft sheets of 36-0000 fabric in two layers for each lane.

Contractor-Built Devices Speed Soil Cementing

A contractor rebuilding streets with soil cement in South Milwaukee, Wis., developed several time-saving devices to speed completion of 9.5 mi of street reconstruction.

Prime contractor Streets and Roads Co., Inc., subcontracted part of the soil-cement work to R. C. Borchet Engineering & Supply, Inc., of Milwaukee. The job involved treating 186,000 sq yd of in-place material with 7 to 8% cement to produce a 6-in. soil-cement surface.

Borchet devised a combination spreader-scarifier to distribute cement by attaching a cement spreader to the front end of a motor grader. The grader operator lowered it for spreading and raised it for scarifying.

Another time-saving device used by Borchet was a wood A-frame made of 2x6's that simplified refilling of water trucks. A hose from a fireplug was secured to the top of the frame and water trucks backed up under the A-frame to position the spouts of their tanks within convenient reach of the hose.

STEEL CONSTRUCTION STAYS ON SCHEDULE—This all-steel framework for an apartment includes high-strength bolted structural frame, open-web joists, and Slabform for poured concrete floors. All steel furnished by Bethlehem.

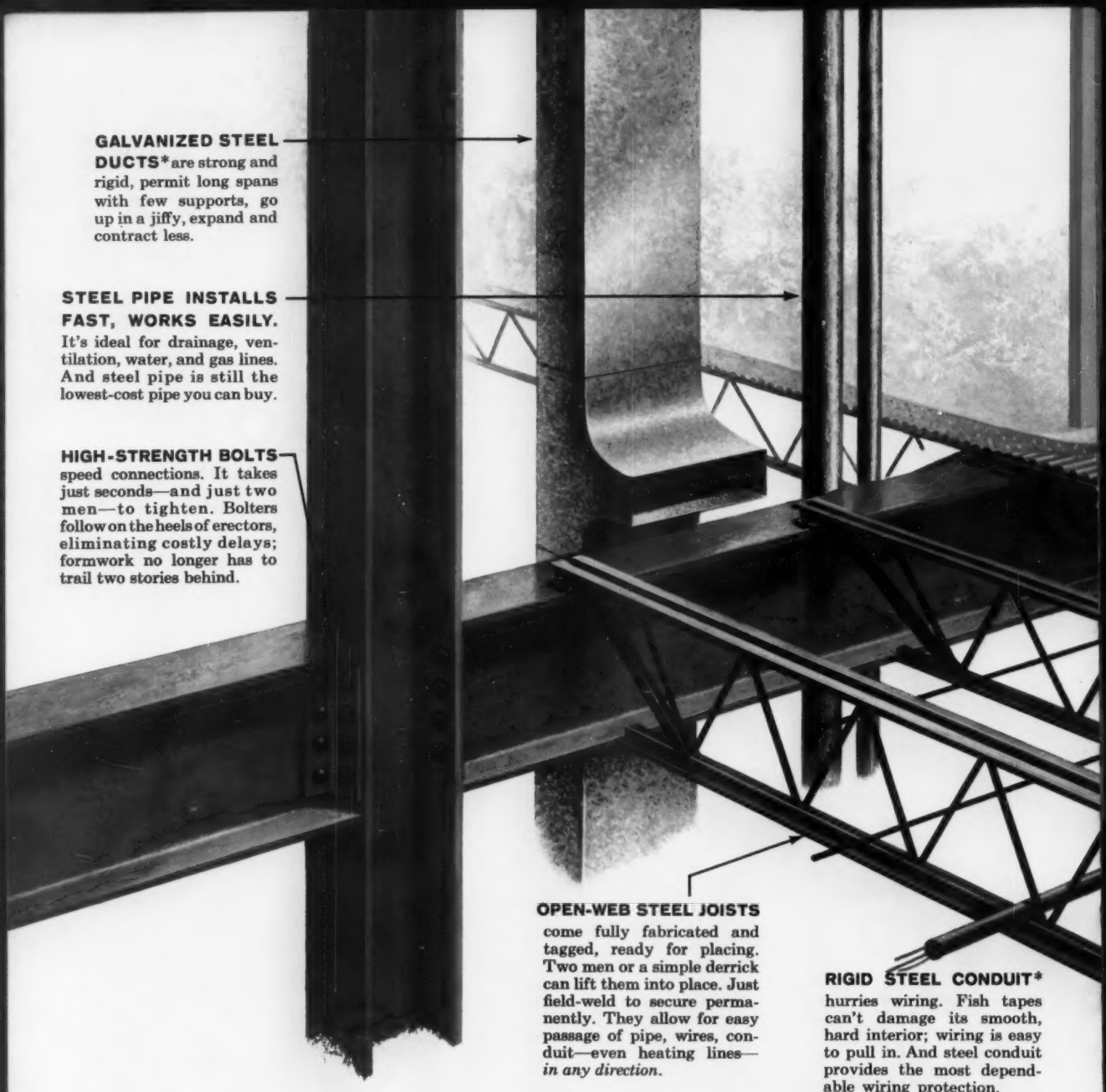
Steel

For strength
. . . economy
. . . versatility

When your client wants early completion, early return on his investment...thank heaven for steel!

BETHLEHEM STEEL

BETHLEHEM STEEL



GALVANIZED STEEL DUCTS* are strong and rigid, permit long spans with few supports, go up in a jiffy, expand and contract less.

STEEL PIPE INSTALLS FAST, WORKS EASILY. It's ideal for drainage, ventilation, water, and gas lines. And steel pipe is still the lowest-cost pipe you can buy.

HIGH-STRENGTH BOLTS speed connections. It takes just seconds—and just two men—to tighten. Bolters follow on the heels of erectors, eliminating costly delays; formwork no longer has to trail two stories behind.

OPEN-WEB STEEL JOISTS come fully fabricated and tagged, ready for placing. Two men or a simple derrick can lift them into place. Just field-weld to secure permanently. They allow for easy passage of pipe, wires, conduit—even heating lines—*in any direction.*

RIGID STEEL CONDUIT* hurries wiring. Fish tapes can't damage its smooth, hard interior; wiring is easy to pull in. And steel conduit provides the most dependable wiring protection.

Steel goes up fast!

SHOP-FABRICATED STRUCTURAL STEEL arrives at the site ready to go into place. No expensive, time-wasting operations. A steel framework goes up fast—two stories or twenty-two stories. Long before the frame is completed, other trades get started. Floors, curtain walls, electric wiring, air-conditioning, and plumbing can be installed more quickly.

BETHLEHEM STEEL

PREFABRICATED STEEL WALL PARTITIONS* do away with slow on-site construction of interior walls. Easy to handle and install—and to take down and re-erect—these colorful panels make possible many variations in interior room arrangement.

PORCELAIN-ENAMELED STEEL PANELS*, for colorful curtain wall construction, come ready for installation, fasten to the structural steel frame in minutes. These panels not only save valuable erection time, but the space and weight of heavy masonry walls as well.

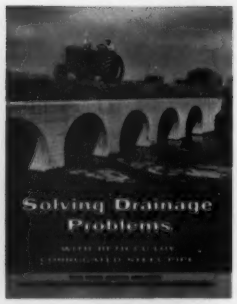
SLABFORM speeds pouring of concrete floors and ceiling slabs. No blocking, no bracing; compared to flexible-type centerings, it saves money. Slabform quickly provides a safe working platform for all trades.

BETHLEHEM STEEL

**Bethlehem does not make these finished products, but does supply new Bethnamel sheets for porcelain-enameled curtain walls; cold-rolled steel sheets for wall partitions; Bethcon galvanized steel sheets for ductwork; and steel pipe for rigid steel conduit.*

Do you have these booklets ?

No. 549 Describes Bethlehem's role in fabricating and erecting 53,000 tons of steelwork for the Chase Manhattan Bank Building in New York.



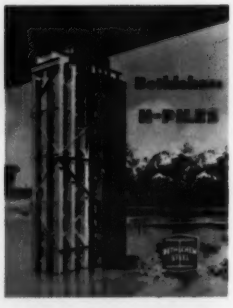
No. 425A This informative manual on corrugated sheet steel pipe includes tables for evaluating flow friction and other practical data.

No. 553 Describes details of both "S" series and "L" series joists. Includes standard loading tables, accessories, specifications.

No. 582 Complete information on Bethlehem's 11 new lightweight wide-flange structural beams.

No. 683 Advantages and placing directions for Slabform, a solid centering for steel-joist and poured-slab construction.

No. 563 Guide for high-strength bolting. Also available: literature describing standard and special fastener products.

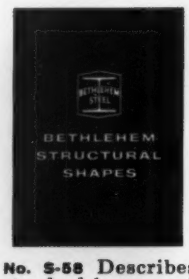


No. 223 Describes a wide variety of installations. Also available: No. 433, Steel Sheet Piling.

No. 569 Reprints ASTM Specifications on 6 grades of structural steel which meet 98 per cent of all usual requirements.

No. 493 Recommendations for construction applications. One of many publications for users of wire rope, strand, and fittings.

No. 393B Complete information on continuous butt-weld and electric resistance-weld steel pipe.



No. S-58 Describes standard beams and columns, with information and tables helpful to designers.

No. 527A Describes joint details and recommended procedures for welding reinforcing bars.

PUBLICATIONS DEPARTMENT
BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

Please send me the booklets circled below:

		549	425A	553
	582	683	563	223
569	493	393B	S-58	527A

*Name*_____

*Company*_____

*Address*_____

*City*_____ *Zone*____ *State*_____

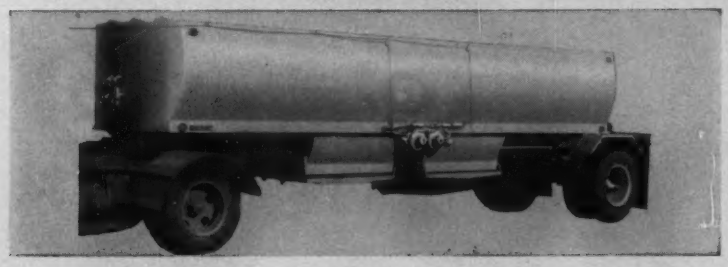
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export Sales: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

Fruehauf Construction Trailers Are BIG MONEY MAKERS!

HOIST-TYPE DUMPS—wide range of designs in steel or frameless aluminum with weight savings up to 3,500 pounds. Single or tandem axle. Single or twin front-mounted or under-mounted telescopic hoists. Available with sand and gravel or rugged rock bodies. Toughest units on the market!



FRUEHAUF BOTTOM HOPPER DUMPS are rugged rough-terrain units. They are excellent for hauling sand, gravel or aggregates. Frameless high-tensile steel body. Tandem models with 14 to 30 cubic yard payloads for high-profit, lower-cost hauling.

PLATFORM TRAILERS—designed for years of rugged service. Fruehauf Platforms range from brawny 50,000-pound capacity Workhorse units to lighter-weight multi-purpose units. Lengths from 21½ feet for single axle units to 42 feet for tandems.

HIGH-TEMPERATURE INSULATED TANKS—engineered to haul bigger payloads of asphalt, road oil, or similar products. Tank capacities range up to 9,000 gallons. Available in steel or weight-saving aluminum. Safely transports liquids with temperature requirements ranging from 150° to 450° F.

FRUEHAUF TRAILERS

For Forty-Seven Years—World's Largest Builder of Truck-Trailers!

FRUEHAUF TRAILER COMPANY
10949 HARPER AVENUE • DETROIT 32, MICHIGAN

Please send me Fruehauf's complete line folder for 1961.

Name _____
(please print)

Company _____

Address _____

City _____ State _____

Circle 37 on Reader Service Card

This diesel has been powering an asphalt plant for six years. *And not one repair*, major or minor, has been made on the engine in all that time, thanks to proper preventive maintenance and Cities Service DC-300 oil!

To the Rein, Schultz and Dahl Company of Madison, Wisconsin, it is trouble-free operation such as this that plays so vital a role in running a profitable business. That is why they use Cities Service DC-300 oil, exclusively, in all their engines.

New DC-300 is one of the most important developments in diesel engine lubrication. It prevents sludge and clogging, stops rust and corrosion, and contains a special anti-wear additive to increase engine life. For information call your local Cities Service Office, or write: Cities Service Oil Company 60 Wall Street, New York 5, New York.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

Circle 38 on Reader Service Card

Trends in the Machinery Market...

Price Index

	JAN. 1961	MONTH AGO	YEAR AGO	% CHANGE 1960-1961
All Types of Equipment	177.3	177.3	173.6	+ 2.1
Cranes; Draglines, Shovels	**173.5**	**174.1**	**171.2**	**+ 1.3**
Shovel, ½ cu yd	169.3	169.3	165.0	+ 2.6
Shovel, ¾ cu yd	175.4	175.4	173.9	+ 0.9
Shovel, 1-1½ cu yd	189.3	189.3	187.0	+ 1.2
Shovel, 2-2½ cu yd	169.1	172.4	164.7	+ 2.7
Shovel, 3-3½ cu yd	159.8	159.8*	167.8	— 4.8
Shovel, 6 cu yd	197.9	197.9	195.0	+ 1.5
Crane, truck mounted	168.2	168.2	168.2	0
Crane, tractor mounted	135.1	135.1	135.1	0
Bucket, clam shell	162.9	162.9	157.5	+ 3.4
Bucket, dragline	169.3	169.3	169.3	0
Scrapers and Graders	**166.6**	**166.6**	**165.8**	**+ 0.5**
Scraper, 4 wheel, 8-10.5 cu yd	155.0	155.0	155.0	0
Scraper, 4 wheel, 12-15 cu yd	156.8	156.8	156.8	0
Scraper, 2 wheel, 15-19.5 cu yd (a)	126.2	126.2	124.9	+ 1.0
Grader, heavy duty	174.1	174.1	172.6	+ 0.9
Grader, light & medium	170.9	170.9	171.1	— 0.1
Tractors (non-farm, incl industrial)	**195.3**	**195.3**	**189.9**	**+ 2.8**
Wheel type, off-highway (a)	129.2	129.2	129.2	+ 0.2
Crawler type, 50-74 dph	205.3	205.3	195.8	+ 4.9
75-99 dhp	204.3	204.3	200.2	+ 2.0
100-154 dhp	199.2	199.2	192.4	+ 3.5
155-200 dhp	208.6	208.6	203.3	+ 2.6
Machinery, Tractor Mounted	**176.7**	**176.2**	**169.0**	**+ 4.6**
Dozer, cable controlled	164.8	164.8	154.4	+ 6.7
Dozer, hydraulic controlled	201.9	201.9	186.6	+ 8.2
Cable power control unit	152.9	152.9	151.4	+ 1.0
Loader, tractor shovel	164.6	164.6	162.5	+ 1.3
Specialized Machinery	**159.3**	**158.8**	**156.2**	**+ 2.0**
Ditcher	153.8	153.8	150.1	+ 2.5
Roller, tandem	230.3	226.4	220.2	+ 4.6
Roller, 3 wheel	178.7	178.7	174.9	+ 2.2
Ripper and rooter	164.5	164.5	150.5	+ 9.3
Dewatering pump, 10 M gph	111.5	111.5	110.3	+ 1.1
Dewatering pump, 90 M gph	151.5	151.5	151.5	0
Portable Air Compressors	**174.7**	**167.5**	**167.5**	**+ 4.3**
Contractor's Air Tools	**190.1**	**181.6**	**181.6**	**+ 4.7**
Mixers, Pavers, Spreaders	**155.9**	**157.0***	**158.2**	**— 1.5**
Mixer portable, 11 cu ft	166.6	166.6	166.8	— 0.1
Mixer, portable, 16 cu ft	172.7	172.7	172.7	0
Mixer, truck, 6 cu yd	131.9	131.9	132.7	— 0.6
Mixer, paving, 34 cu ft	191.6	195.8*	193.5	— 1.0
Concrete finisher & spreader	173.5	173.5	196.7	—11.8
Bituminous distributor	126.2	126.2	126.2	0
Bituminous spreader	179.4	179.4	170.2	+ 5.4
Bituminous paver	165.6	165.6	163.2	+ 1.5
Off-Highway Trucks, Wagons (b)	**102.5**	**102.5**	**101.1**	**+ 1.4**
Contractors off-highway truck (b)	102.0	102.0	101.1	+ 0.9
Trailer dump wagon (b)	106.7	106.7	101.4	+ 5.2

• (a) January, 1955 = 100 • (b) January, 1958 = 100 *Revised
BLS Primary Market Price Indexes, U. S. Department of Labor, 1947-49 = 100

List Prices Rise Slightly, New Orders Hold Steady

EQUIPMENT LIST PRICES increased slightly as the new year got underway, according to the U.S. Bureau of Labor Statistics. The January index of 173.3, based on 1949=100, reached a new high and topped January of last year by 2.1%.

The 1960 slide in new orders for construction and mining equipment bottomed out in November. December's index was one point higher at 209, based on 1949 monthly volume as 100. But the new orders index computed by the McGraw-Hill Economics Dept. was far below the December record of 244 set in 1958 and matched in 1959. The final month of 1960 was only the fifth highest December on record for construction and mining equipment orders. The full year 1960, however, saw the orders index strike an average of 260. This was second to 1959's high of 293.

Equipment makers expect orders in 1961 to fall short of the 1960 mark by about 8%, according to companies reporting to McGraw-Hill. These manufacturers anticipate that orders will have a first quarter '61 index value of 242 (17% under a year ago); go up 2% in the second quarter to 247 (also 17% below last year); dip 5% in the third quarter to 235 (Slightly less than a year ago); and edge up a bit to 238 in the last quarter. Although the fourth quarter would show the first year-to-year gain, this would be due to the fact that the fourth quarter of 1960 was so low.

Contractors' equipment buying sagged in 1960, but their new heavy construction business didn't. On top of the 12% rise in 1960 awards, January of this year racked up a 31% gain over the relatively low January 1960 volume, according to *Construction Methods* figures.

In addition to this 4½ yd Model 275A Michigan, Kirsch owns two 2¾ yd Model 175A's. "Service from our Michigan Distributor, McAllister Equipment Co, has been excellent," say Kirsch officials.

Problem: to increase production, yet lower costs
Solution: this Michigan and its 4½ yd bucket. Result:

12-YD TRUCKS LOADED

At the Vic Kirsch Construction Company pit near Hammond, Indiana, they are loading trucks in *one-half to one-third the time* it took before!

Loading *costs*, likewise, have been cut about in half!

Reason for this production-doubling, cost-cutting record is the big Model 275A Michigan Tractor Shovel shown here. This 22,000 lb lift capacity unit, equipped with a 4½ yd excavating bucket, *is doing more work than the TWO 2¼ yd crawler-loaders it replaced.*

Heaps 20 yds in 1¾ minutes

Teamed mostly with 12 yard dump trucks in this dune-area sand pit, the fast-moving Model 275A has established an average load cycle of only 60 to 80 seconds—*from first pass into the bank 'til loaded truck pulls away.* "On our busy days," reports company president Bob Turner, "we move 12-yard trucks out of our pit *at the rate of one per minute.*" Big 20-yard semis usually take 1¾ to 2 minutes (four or five passes) . . . 24-yard semis about 2½ minutes. These records average all grades of sand, all kinds of weather. In fact, the Michigan didn't miss a day of work all last winter . . . its great breakout

Circle 40 on Reader Service Card

force permitting digging and loading even in sub-zero weather.

Carries 7 tons up 30% slope

Dependable performance like this has been *only one* of Michigan's achievements. The versatile, 262 hp, 48,200 lb rig handles stripping of root-filled overburden too. It occasionally travels a mile over paved highways to load slag. The operator, Carl Henrich, frequently uses it to build sand stockpiles. Here, the Michigan has carried 4½ yds of wet material, over 7 tons per load, up steep 30% ramps.

On work like this, according to Mr. Kirsch, Michigans outdo crawlers in two important ways . . . (1) they doze faster (up to 7 or 8 mph) . . . (2) tires last years compared to rail-roller replacement every six months.

Also own matched Michigan Scraper, Michigan Dozer

From an operational point-of-view, the Model 275A Michigan Tractor Shovel has another advantage for a large contractor like Kirsch. The firm and its affiliate, Red Top Trucking Co., Hammond, also own a Michigan Tractor Dozer and a Michigan Tractor Scraper. All three units have *the same basic power train* (Clark torque converter, power-shift transmission, planetary wheel axles), *same engine* (262 hp), *same controls*. Thus, parts stocks are simplified, maintenance made easier — and, when Tractor Dozer and 19 yd Tractor Scraper are teamed on a typical Kirsch contract —be it million-dollar superhighway section or far smaller thousand-yard building site—matched power increases loading efficiency.

If you move dirt, we honestly believe *your* time will be well spent on a study of the big Michigans. Tractor Shovels, Tractor Dozers, Tractor Scrapers — all are now proved by years in the field. All are in regular production and readily available. See your local Michigan Distributor for details on performance . . . price . . . and delivery!

Michigan is a registered trademark of
CLARK EQUIPMENT COMPANY
Construction Machinery Division

CLARK® EQUIPMENT

2403 Pipestone Road
Benton Harbor 9, Michigan

In Canada:
Canadian Clark, Ltd.
St. Thomas, Ontario

IN 1 MINUTE

On typical Kirsch contract—landleveling for new plant site—262 hp Michigan Dozer handles push-loading, matched 19 yd 262 hp Michigan Scraper does the hauling.

On one job: 20 different materials

Contractor slashes costs by using Scrapers to handle all of them. The make: Michigan.

Fine sand. Gravel. Silt. Clay. Gumbo. Shale. Slate. Three soil types with a CBR under 5.0. Twenty kinds of material in all.

A real test for any scraper fleet, you'll certainly agree.

It all took place *in one 5 mile road contract*—a relocation of U.S. 31W through the hilly river-valley "Knob" country of northern Kentucky. The dirtmover—Ferguson Contracting Company, Princeton. Their fleet—a matched quartet of 262 hp Michigans: one Model 280 Tractor Dozer for push-loading, three 19-yd Model 210 Tractor Scrapers *for all dirtmoving!*

Output in wet clay: 500 pay yds hourly

Work started in unusually wet weather—4½ inches of rain *more* the first month than normal, according to Weather Bureau statistics. First, under these conditions, the machines stripped topsoil. Then on they went to the first cut—containing a type of clay. Loads averaged 14 pay yds each . . . load time, about 40 seconds. According to time studies made by Tom Ferguson, company president, each of his three Michigan Scrapers, on typical 3000 ft cycles, delivered 12 loads per hour. Production averaged 4,000 pay yds per 8-hour shift . . . a tribute partly to the Michigan Dozer's fast loading speed, 5 to 7 mph . . . partly to the Dozer's fast backup, 8 to 10 mph. *And the Michigan Scrapers, with their power shift and torque converter providing maximum speed on the grades, often hauled in fourth gear (up to 31½ mph).*

Michigans overcome many problems including in-place loading of shale

Later in the 280,000 yd job, a number of interesting problems were overcome.

One involved the slate and shale—materials which often require blasting. But even here, Michigan Dozer-Scraper power and traction permitted effective in-place loading.

At another point, when material was pure clay, the sun shone long enough to completely dry things out. Every pass created clouds of dust. To the Michigan operators it meant little difference, however. Michigan cockpits, 7½ ft above ground level, kept them above most of the dirt.

With rear-wheel steer, Michigan Dozer has full power even when turning.

With Michigan power-shift, operators never need slow down to change gears. Result maximum speed on hilly haul cycles.

Also handle fine sand

In another cut, predominately oozing plastic clay, a 40 ft wide by 550 ft long vein of highly absorbent powdery sand was encountered. The task was to bring the cut down to grade; then figure a way to build some sort of drain which would prevent water from accumulating and undermining the finished highway. This problem was licked by removing the clay and undercutting the sandy section by about two feet—then cutting a drain trench down the center and an outlet finger to the outside of the berm. To finish the job, the drains were filled with No. 3 crushed stone and the entire area filled back to grade with high-grade borrow. All this work, including cutting and shaping the ditches, was handled by the Michigan Tractor Dozer and Scrapers. Practically no production time was lost, since this drainage project could be done when state inspectors considered other areas too wet to work.

Owners like Michigan "power, speed, ease of operation"

Michigan "power and speed" were two important factors in turning back what could have been "job-busting" problems, according to the Ferguson executives.

Project Supt Ray Cardwell reports additionally that the "ease with which new operators learned to handle the power-shifted, power-steered Michigans" also "contributed heavily" to the success of the job. So too did Michigan ease of maintenance, dependability, and the good service from distributor Rudd Construction Equipment Co of Louisville.

YOUR Michigan distributor will be glad to show you these machines in action so you can judge their advantages for yourself. Four Dozers, 162 to 600 hp; three Scrapers, 10½ to 29 yds, to choose from.

Michigan is a registered trademark of

CLARK EQUIPMENT COMPANY
Construction Machinery Division

CLARK EQUIPMENT

2403 Pipestone Plant
Benton Harbor 37, Michigan

In Canada:
Canadian Clark, Ltd.
St. Thomas, Ontario

Circle 43 on Reader Service Card

Highway Work Off to Fast Start

JANUARY HIGHWAY and bridge contracts usually drag along at or near the low rate for the year. But this was not the case this January when total volume reported by *Construction Methods* soared 97% above a year ago.

The weekly average of $98 million set a new January record and the month was the best for new highway and bridge business in 1½ years.

All sections of the country showed gains as three out of four states topped a year ago. The South racked up the biggest increase, 233%, while the Midwest —with much higher volume than the South—scored a 155% gain (*see table*).

This fast start in 1961 contract awards indicates that several state highway departments are taking advantage of the U. S. Bureau of Public Roads' liberalized schedule for the disbursement of federal aid funds available for fiscal 1961.

As of October 1960, the states could have obligated the first nine months' worth of their total federal aid allotment for fiscal 1961. And last month BPR gave them the green light to obligate the rest of fiscal 1961 funds—those for the April-June quarter.

BPR let the bars down on contracting because both the old and new administrations were anxious to speed up highway and bridge construction to combat the slowdown in other industries.

The states, however, were not stampeded. Up to the end of the first half of fiscal 1961 (Dec 31, 1960), the states had used only 47% of available federal aid for the fiscal year (*see table on page 53*). Had they used up all aid available at the time, they would have obligated 75% of the '61 total.

A few big roadbuilding states like California, New York, Ohio and Texas apparently took advantage of the BPR offer to use up obligational authority in advance. As of January 1, these states had only 38% to 42% of their total 1961 federal highway aid allotment remaining.

But 30 other states had over

continued on page 54

Highway and Bridge Contract Trend by States — 1957 - 1961

Reported by Construction Methods in millions of dollars

State and Region	Annual Totals 1957	1958	1959	1960	Chg. %	January 1960	1961	Chg.
U. S. TOTAL	3,736.6	4,432.0	3,456.9	4,186.6	+ 21	199.5	392.3	+ 97
NEW ENGLAND	210.6	237.8	209.6	154.2	— 26	3.8	6.2	+ 63
Maine	16.3	36.4	15.7	22.2	+ 41	0.5	0.9	+ 80
New Hampshire	16.6	25.8	22.1	16.4	— 26	1.8	2.2	+ 22
Vermont	9.8	19.5	29.3	16.2	— 45	1.1	0.1	— 91
Massachusetts	61.8	89.0	78.8	66.9	— 15	0.3	0.2	— 33
Rhode Island	15.5	16.0	4.9	10.7	+118	0	0.2	+
Connecticut	90.6	51.1	58.8	21.8	— 63	0.1	2.6	+2500
MIDDLE ATLANTIC	725.3	767.1	509.1	818.7	+ 61	62.0	85.0	+ 37
New York	377.2	363.0	268.4	471.8	+ 76	31.8	53.6	+ 69
New Jersey	46.4	76.4	73.1	68.8	— 6	3.6	16.0	+ 344
Pennsylvania	222.5	230.7	88.0	161.2	+ 83	16.6	10.8	— 35
Maryland	50.3	64.0	45.8	83.5	+ 82	9.4	1.7	— 82
Dist. of Columbia	13.5	18.4	24.9	27.3	+ 10	0.3	2.6	+ 767
Delaware	15.4	14.6	8.9	6.1	— 31	0.3	0.4	+ 33
SOUTH	593.7	878.5	767.8	753.6	— 2	23.4	78.0	+ 233
Virginia	81.3	64.1	46.5	119.1	+156	0.8	8.1	+ 913
West Virginia	22.4	43.6	43.0	32.4	— 25	1.2	1.7	+ 42
North Carolina	68.5	71.2	67.9	49.5	— 27	0	0	0
South Carolina	32.7	75.7	57.0	38.1	— 33	4.1	2.8	— 32
Georgia	48.9	99.7	73.7	40.7	— 45	0.5	14.7	+2840
Florida	93.7	121.6	129.9	101.7	— 22	2.4	8.5	+ 254
Alabama	35.6	54.0	72.7	83.2	+ 14	0.2	8.0	+ 300
Mississippi	49.2	43.9	48.8	43.7	— 10	0.9	7.6	+ 744
Louisiana	56.8	107.6	88.4	101.7	+ 15	7.5	7.7	+ 3
Kentucky	45.4	106.2	81.1	67.0	— 17	0	6.4	+
Tennessee	59.2	90.9	58.8	76.5	+ 30	5.7	12.6	+ 121
MIDDLE WEST	880.0	954.9	639.4	825.3	+ 29	50.1	127.8	+ 155
Ohio	196.6	332.7	115.5	209.4	+ 81	37.5	52.6	+ 40
Indiana	38.0	109.4	77.4	81.8	+ 6	0.2	17.8	+8800
Illinois	455.8	265.5	235.5	254.2	+ 8	8.0	4.5	— 44
Wisconsin	58.9	101.8	78.3	73.7	— 6	1.1	3.8	+ 245
Michigan	140.7	145.5	132.7	206.2	+ 55	3.4	48.0	+ 41
MISS. TO ROCKIES	873.6	1,058.9	910.6	976.8	+ 7	32.1	62.0	+ 93
Minnesota	56.7	97.6	80.2	75.7	— 6	3.4	6.0	+ 76
Iowa	105.1	112.3	99.2	104.0	+ 5	4.6	2.7	— 41
Missouri	81.6	97.6	76.1	112.6	+ 48	1.6	15.8	+ 888
Arkansas	20.8	33.0	44.6	43.1	— 3	0	4.7	+
North Dakota	32.7	38.4	41.1	27.7	— 33	0	5.9	+
South Dakota	24.4	30.9	40.6	48.1	+ 18	0	1.3	+
Nebraska	31.3	44.7	35.6	40.5	+ 13	0.9	2.5	+ 178
Kansas	55.4	80.7	51.2	56.1	+ 10	0.2	5.9	+2850
Oklahoma	62.4	84.1	41.5	49.7	+ 20	1.6	3.7	+ 131
Texas	245.3	275.7	304.7	274.7	— 10	12.0	4.8	— 60
Montana	25.3	43.3	21.8	30.4	+ 39	5.5	4.0	— 27
Wyoming	33.3	32.0	14.6	33.1	+127	0	1.3	+
Colorado	57.8	50.3	36.5	46.8	+ 28	2.4	3.3	+ 38
New Mexico	41.5	38.3	22.7	34.1	+ 50	0	0.2	+
FAR WEST	443.4	534.8	420.4	658.0	+ 57	28.1	33.1	+ 18
Idaho	18.4	30.3	22.7	21.0	— 8	0.7	2.2	+ 214
Utah	16.7	27.8	26.8	20.8	— 22	0	3.4	+
Arizona	23.0	34.8	40.9	46.0	+ 12	3.4	1.7	— 50
Nevada	13.8	19.4	7.6	12.8	+ 68	0	0.8	+
Washington	75.8	72.3	53.3	84.3	+ 58	6.2	3.4	— 45
Oregon	46.2	78.8	39.9	63.4	+ 59	0.3	1.0	+ 203
California	249.5	271.4	215.8	386.2	+ 79	15.7	18.7	+ 19
Alaska	na	na	6.9	10.3	+ 49	0.5	1.5	+ 200
Hawaii	na	na	6.5	13.2	+103	1.3	0.3	— 77

JOISTOLOGY*

HAS ADDED VERSATILITY—

TO MODERN FLOOR AND ROOF CONSTRUCTION

***joist-ol'o-gy, n.** (As Webster *should have* defined it) The art or science of designing and building more economical structures through the use of open web steel joists.

Architects and engineers have found that steel joists have given them practically a free hand in the design and construction of today's buildings. These lightweight, space-saving structural members have been adapted to virtually every size and style of building, whether it's one story or twenty, ultra-modern or ultra-conservative.

Steel joists have done more than provide high-strength support for floors and roofs. They lend themselves so handily, and so economically, to the incorporation of overhung roofs, cornices, balconies and other architectural embellishments into building design.

With material costs and erection time figuring so prominently in construction plans these days, steel joists still offer the practical answer to the need for economical, versatile, easy-to-handle structural materials.

6007

STEEL JOIST APPROVED SJI INSTITUTE

Steel

Another in a series of advertisements placed in the public interest by the STEEL JOIST INSTITUTE, Suite 715, DuPont Circle Bldg., Washington 6, D.C.

Save on construction costs with the new '61 FORD TRUCKS

SAVE FROM $22 TO $260 ON PRICE* ALONE WITH FORD'S ECONOLINE PICKUP

Profit-conscious contractors are finding it's good business to do business with the new Ford Econoline Pickup. It's America's lowest-priced* ½-tonner—bar none! Priced from $22 to $260 below conventional pickups. But that's just the beginning! You get lively performance and proven gas economy with the popular 144 cubic inch Falcon Six. This modern engine goes 4,000 miles between oil changes, and has an aluminized muffler which lasts up to three times as long as ordinary mufflers.

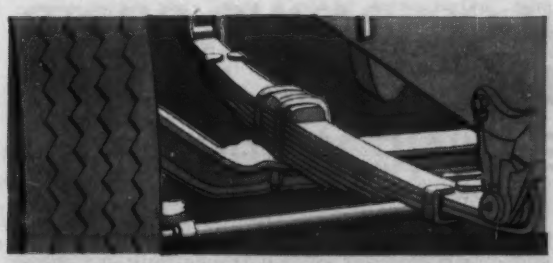
And you can save more because Ford's functional design has pared away 1,000 pounds of dead weight, yet you still get the payload capacity of standard ½-tonners. The big 7-foot box provides a whopping 73 cubic feet of loadspace . . . that's up to 23% more than conventional 6½-foot pickups. A full 49-inch tailgate opening means you can load items like standard sheets of 4′ by 8′ plywood. And the full-length *flat* floor permits bulky or heavy loads to be positioned easily by sliding them anywhere in the pickup box.

And you can save on maintenance expense, too. The engine cover can be lifted quickly, exposing the entire engine for rapid service. Spark plugs, distributor, etc., are conveniently located to speed engine tune-ups. And many major repairs can be made without ever removing the engine. One-piece cab-and-body construction provides increased rigidity and eliminates a major source of rust. In addition, all main underbody structural members are heavily zinc-coated to resist rust and corrosion.

New Ford Econoline ½-ton Pickup. Big 7-foot box with flat floor and 73 cu. ft. of usable loadspace. 1,650-lb. payloads with 4,350-lb. maximum GVW.

*Based on a comparison of latest available manufacturers' suggested retail delivered prices

Circle 45 on Reader Service Card



SAVE UP TO $250 ON FRONT TIRES! In certified tests of two-ton truck suspensions, Ford front tires lasted over twice as long. In 40,000 miles this saving can add up to $250 . . . more as the mileage increases. And Ford's sturdy I-Beam front axle and leaf-spring suspension not only cut tire wear, but their simpler design also cuts maintenance costs.

12,000 MILE OR 12 MONTH WARRANTY

SAVE WITH GREATER DURABILITY . . . on all 1961 Ford Trucks, each part, except tires and tubes, is now warranted by your dealer against defects in material and workmanship for 12 months or 12,000 miles, whichever occurs first. The warranty does not apply, of course, to normal maintenance service and to the replacement in normal maintenance of parts such as filters, spark plugs and ignition points. Never before have you had such protection . . . such evidence of long-term economy!

SAVE WITH FORD'S NEW 262-CU. IN. "BIG SIX" ALL-TRUCK ENGINE FOR TOP PERFORMANCE AND ECONOMY

America's lowest-priced* medium-duty tilt-cab models now offer a big 262-cubic-inch Six with the power of big displacement, the gas economy of 6-cylinder design, plus the durability of heavy-duty construction. This engine features a sturdy stress-relieved head and block, strong forged steel crankshaft, long-lasting stellite-faced intake and exhaust valves and durable pyramid-type connecting rods. Positive Crankcase Ventilation reduces oil dilution and sludge formation to extend engine life. Ford's proven 292 V-8 and 292 HD V-8—the V-8's with "six-like" economy—are also available for your special power needs.

The popular Ford Tilt Cab Series outsells all other makes and for good reason! Their compact 82-inch BBC permits longer bodies within a given over-all length . . . for longer loads of lumber and building materials with excellent maneuverability. And set-back front axle design means more weight is carried on the front axle for greater payloads.

You also save with other new features like the stronger radiator with new lock-seam construction, and color-coded printed instrument panel electrical circuits that provide for greater reliability and simplified maintenance. In addition, Ford's parallel ladder-type frame, with standard 34-inch width, allows you to install new or transfer your present special construction bodies quicker and for less.

NEWS OF MORE SAVINGS FOR HEAVY CONSTRUCTION WORK . . . ▶

Circle 47 on Reader Service Card

Save on construction costs with the new '61 FORD TRUCKS

NEW SUPER DUTIES CUT OPERATING COSTS, GIVE PROVEN DURABILITY THAT'S BACKED BY A 100,000 MILE ENGINE WARRANTY

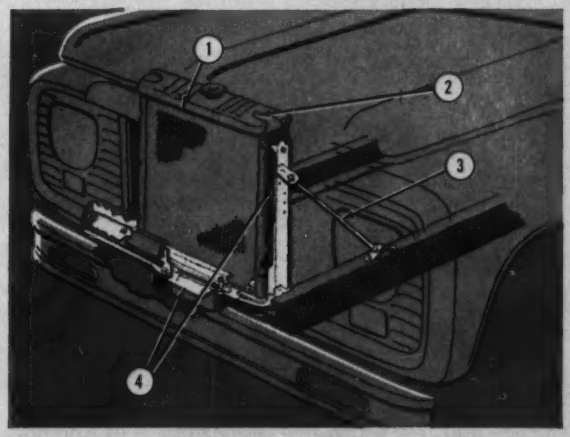
New 100,000-mile warranty on Super Duty V-8 gas engines is the most liberal in the industry. On 401-, 477- and 534-cu. in. V-8's, Ford Dealers will replace any major engine part (including block, heads, crankshaft, bearings, valves, pistons, rings) found to be defective in materials and workmanship providing trucks are used in normal service. The warranty covers full cost of replacement parts for 100,000 miles or 24 months, whichever occurs first . . . full labor costs for first year or 50,000 miles, sliding percentage scale thereafter. Never before have you had such protection . . . such evidence of long-term durability!

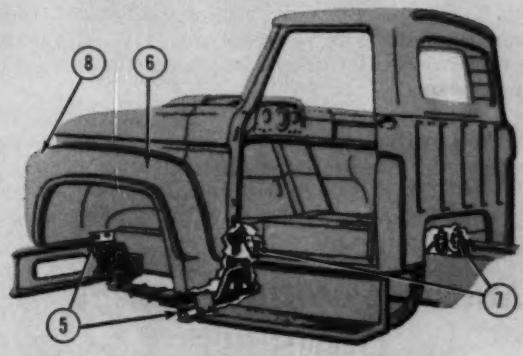
And you save with greater gas economy! Certified tests prove the new Super Duty V-8's give up to 20% better mileage. In addition, Ford's new lightweight, *extra-hi-tensile* single-channel frames (standard F-850—F-1000) give you long-lived durability combined with a lightness of weight for added payloads. All in all, you get proven components and design features . . . in trucks built for easier maintenance and lower running costs.

Save with Ford T-Series Super Duty Tandems for exceptional durability, big payloads and low operating expenses. Ford T-850 and T-950 Tandems with Super Duty V-8 engines have rugged double-channel, hi-tensile frames for maximum strength, minimum weight. And they provide a wider range of chassis options so you can choose the right power train and load-carrying components for any job. Eaton and Timken rear axles are now available in bogie assemblies with up to 38,000-lb. capacity. And lightweight aluminum walking beams, wheels and gas tanks are available to keep chassis weights low . . . payloads high.

Ask your dealer about Ford's full tandem line . . . five T-Series with GVW's ranging from 28,000 lb. to 51,000 lb. and GCW's up to 75,000 lb.

SAVE WITH NEW HEAVY-DUTY CONSTRUCTION THAT DOUBLES CAB, SHEET METAL AND RADIATOR LIFE





① **Save with Ford's exclusive "lock-seam" radiator construction** that doubles the solder area at key seams for greatly increased strength and longer radiator life.

② **Save with heavier-gauge metal on radiator tank and header.** Tanks and header have thicker walls to resist vibration, jolts and corrosion for greater reliability.

③ **Save with independent radiator mountings,** separate from front-end sheet metal. This means that road shocks and shakes are not transmitted to the radiator through sheet metal . . . tanks, tubes and connections last longer, require less maintenance.

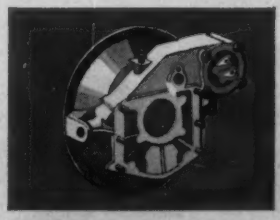
④ **Save with "horse collar" mounting** for extended radiator life. This new mounting on resilient rubber at the center of frame cross member soaks up any frame flexing . . . cuts wear and tear on entire cooling system.

⑤ **Save with independent fender mountings.** Fenders are bolted to a rubber-cushioned transverse bracket at the front and a frame-mounted bracket at the rear. This mounting, independent of both cab and radiator, eliminates stress transfers for increased fender life.

⑥ **Save with removable fenders.** The quick and easy removal of only 8 bolts per fender provides faster service accessibility to the engine area, saving valuable maintenance time.

⑦ **Save with new 3-point cab mounting system** for greater cab durability. Two outboard front mounts plus a centered "twin" rear mount provide a triangular system that holds the cab stationary while allowing the frame to move independently . . . reducing strain on the cab.

⑧ **Save with 25% heavier-gauge sheet metal** in fenders, cab floor pan and toeboard for longer life through more strength and greater resistance to corrosion.



Save with Ford's new Full-Torque flywheel power take-off . . . now available on T-750's and up, to power construction equipment like transit mixers. It's much simpler and more efficient than long, complicated hookups needed with the front-end drives. And the flywheel PTO is lighter in weight—only 105 pounds—for greater payloads.

FORD TRUCKS COST LESS

YOUR FORD DEALER'S "CERTIFIED ECONOMY BOOK" PROVES IT FOR SURE...

FORD DIVISION, Ford Motor Company

Circle 49 on Reader Service Card

Texas utilities contractor reports:

"OUR 774 CUTS 25-200% MORE TRENCH THAN DITCHERS WITH MECHANICAL TRANSMISSIONS"

"We know for a fact our Barber-Greene 774 Ditcher with dual-range Hydra-Crowd transmission cuts 25 to 200% more ditch daily than mechanical transmission ditchers we've used," says H. W. McCurley, of Pearson & McCurley, Beaumont, Texas, utilities contractors.

"Actually the 774 revolutionizes ditcher design with a hydraulic control system that gives the operator fingertip control of forward crowding speeds, boom hoist, discharge conveyor drive . . . all independent of wheel digging speeds. And our operator sure likes the instant dialing of maximum crowding speed for any ground condition.

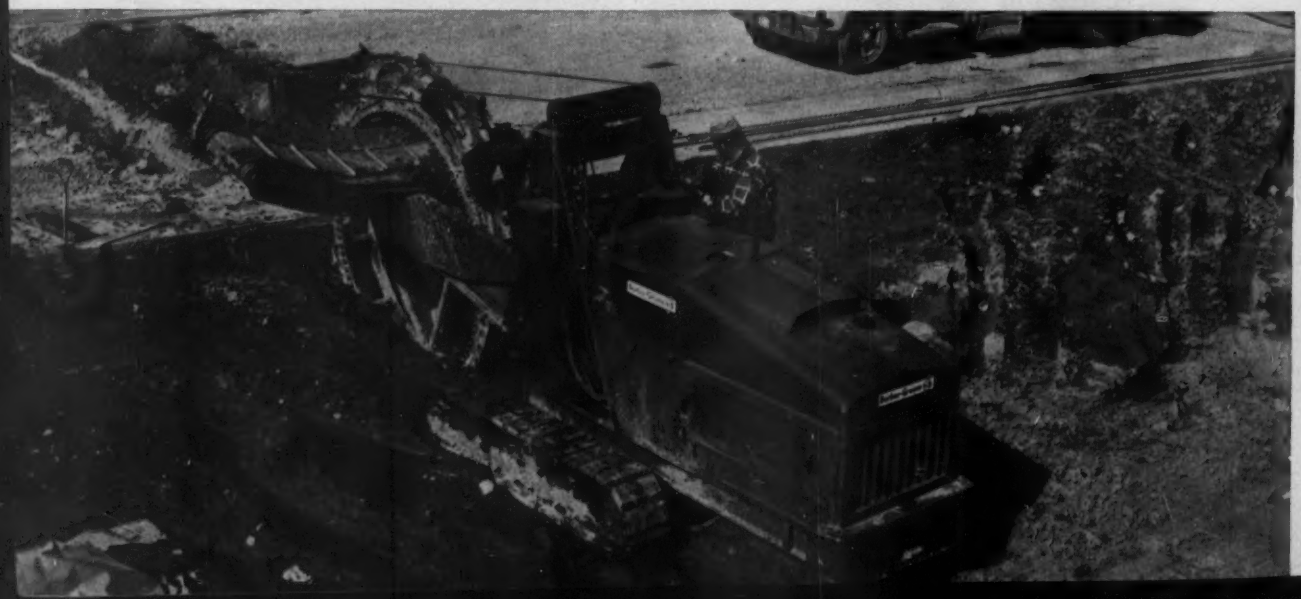
NO PARTS REPLACEMENT—"In ditching 36,000 feet, we've had no parts replacement . . . never changed digging teeth, side cutters or gumbo cutting lips on fingerback buckets," he recalls.

This Texas firm bought its 774 after renting one from a contractor. Your Barber-Greene Distributor will take you to a job and show you the ditcher you are interested in so you'll get all the facts. Call him today.

Midwest utility company
OWNS FLEET OF OVER 25 BARBER-GREENES

This Barber-Greene dug in record time the street mains and over 300 services in one subdivision, keeping well ahead of the crew that was welding, wrapping and lowering in. Owned by a major midwestern gas utility, the Model 773 shown below is only one of the more than 25 Barber-Greene Ditchers in their fleet.

For close quarter operation, Barber-Greene's 772, identical with the 773 except for narrower track gauge and pad width, works within 19″ of side obstructions. All three utility ditchers have dual-range Hydra-Crowd transmission, exclusive digging wheel drive with fully guarded chains, automatic overload protection, shock-absorbing flexible drawbar, hydraulically driven spoil conveyor with rubber-impact rollers, and fewest wearing parts for minimum maintenance. Model 774 is available with 5½ or 7′ wheels and cuts from 18-30″ wide. Models 773 and 772 trench to 5½′ deep and 10-24″ wide.



On jobs in Beaumont and Orange, Texas, installing pipe from 8" to 16", Pearson & McCurley's 774 with 5½-ft. wheel dug up to 2,500-ft. daily in tough gulf coast gumbo. "Has plenty of reserve to dig far beyond our daily needs," says Mr. McCurley.

Rubber-tired or crawler mounted Barber-Greene Vertical Boom Ditchers cut lowest cost trench from 5½" to 24" wide and to 7' deep. Model 705-B, shown, digs to 4'8" deep.

Manufacturer of the only modern ditcher line

Representatives in Principal Cities of the World

Barber-Greene BG

Main Office and Plant AURORA, ILLINOIS, U. S. A.
Other Plants: DeKalb, Milwaukee, Detroit, Canada, England, Brazil, Australia

CONVEYORS • LOADERS • DITCHERS • ASPHALT PAVING EQUIPMENT

Circle 51 *on Reader Service Card*

New drills pack more weight and power than any other machine in their class

E. J. Pétrillo's Yonkers Contracting Co.

MOVES JUGTOWN MOUNTAIN

with Gyro-Flo powered Crawlmaster drills

Three new Ingersoll-Rand Crawlmaster drills are doing the lions' share of the heavy blast-hole work in the 3½ million yard cut in granite gneiss through Jugtown Mountain near Phillipsburg, N. J. Purchased after competitive tests, the rugged Crawlmasters with constant-pressure hydraulic feed are putting down 4½" holes 18 to 20 feet deep. Using the new D-525 drifter with 5¼" bore, they easily out-drilled two 5½" bore machines. Capable of percussion, rotary or Downhole drilling of 4" to 6½" holes at any angle from vertical to horizontal, the Crawlmaster is by far the most rugged and versatile machine in its class. Supplementary drilling on steep slopes on this job is done by six Crawl-IR drills.

All air power for the Jugtown project is supplied by 900-cfm and 600-cfm Gyro-Flo portable compressors. The I-R Gyro-Flo line, available in six sizes from 85 to 900-cfm, offers the highest economy in portable compressor history. Outstanding dependability, freedom from maintenance, smaller and lighter, low oil consumption, closer regulation at all loads—these advantages are a matter of record.

Ask your I-R distributor or engineer for complete information on the cost-cutting Crawlmaster Gyro-Flo combination.

Ingersoll-Rand

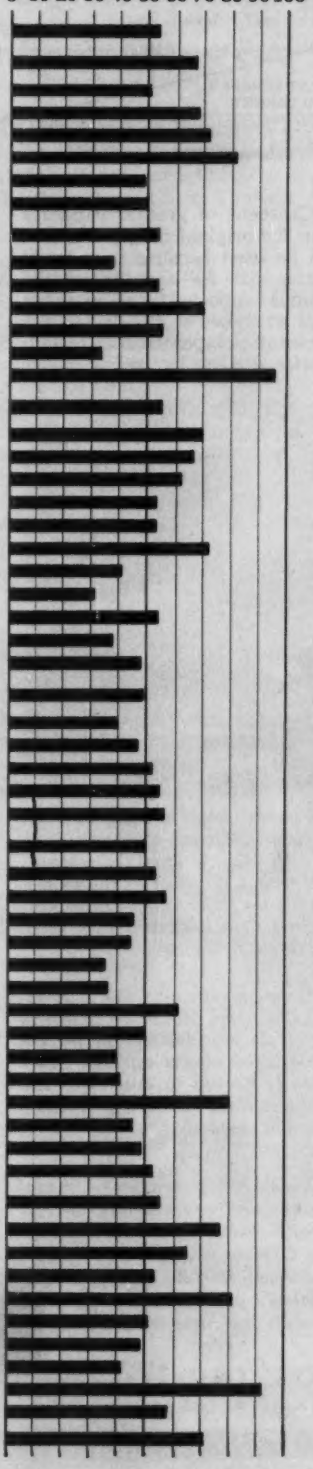
68A14 11 Broadway, New York 4, N. Y.

A CONSTANT STANDARD OF QUALITY IN EVERYTHING YOU NEED FOR DRILLING ROCK

Circle 52 on Reader Service Card

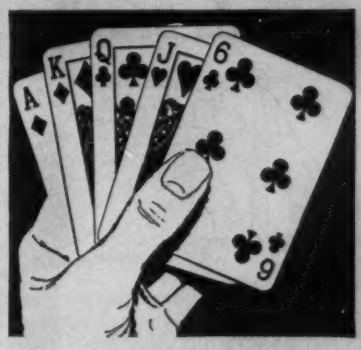
30 States Lag in Using Up 1961 Federal Aid

State and Region	Federal Highway Aid for Fiscal 1961 Total (Millions of $)	Unobligated Balance, Jan. 1, '61	%
U.S. TOTAL	$3,051.1	$1,629.8	53
NEW ENGLAND	167.0	112.7	67
Maine	18.0	9.1	51
New Hampshire	14.4	9.8	68
Vermont	21.2	15.3	72
Massachusetts	67.9	55.9	82
Rhode Island	13.7	6.7	49
Connecticut	31.7	15.9	50
MIDDLE ATLANTIC	475.4	258.0	54
New York	146.2	55.8	38
New Jersey	97.6	52.8	54
Pennsylvania	120.6	84.1	70
Maryland	60.7	33.5	55
D. C.	26.2	8.7	33
Delaware	24.2	23.1	95
SOUTH	667.9	364.1	55
Virginia	107.4	75.3	70
West Virginia	40.1	26.8	67
North Carolina	52.6	32.8	62
South Carolina	28.7	15.3	53
Georgia	86.7	45.7	53
Florida	65.0	46.7	72
Alabama	57.3	23.4	41
Mississippi	34.5	10.8	31
Louisiana	62.3	33.9	54
Kentucky	54.3	20.4	38
Tennessee	79.0	33.1	48
MIDDLE WEST	532.0	260.4	49
Ohio	156.5	63.2	40
Indiana	80.1	37.9	47
Illinois	132.9	69.0	52
Wisconsin	55.9	30.3	54
Michigan	106.6	60.0	56
MISS. TO ROCKIES	653.4	327.4	50
Minnesota	56.3	29.7	53
Iowa	35.3	20.0	57
Missouri	79.1	36.7	46
Arkansas	30.4	13.6	45
North Dakota	17.2	6.1	36
South Dakota	33.4	12.4	37
Nebraska	44.2	27.0	61
Kansas	37.0	18.6	50
Oklahoma	36.5	14.4	40
Texas	134.9	55.3	41
Montana	52.8	42.3	80
Wyoming	27.5	12.7	46
Colorado	30.0	14.5	48
New Mexico	38.7	24.1	62
FAR WEST	516.6	283.8	55
Idaho	34.1	26.4	77
Utah	26.6	17.2	65
Arizona	39.9	21.3	53
Nevada	27.6	22.3	81
Washington	51.3	26.0	51
Oregon	44.8	21.3	48
California	235.6	99.3	42
Alaska	49.5	45.7	92
Hawaii	7.1	4.1	58
Puerto Rico	7.9	5.6	71



U.S. Bureau of Public Roads data.

POKER? Play to win!



How would you play this hand?

Don't let the high cards tempt you. This is no better than drawing to an inside straight (odds about 12 to 1 against filling). Fold...fast...and patiently wait for a good hand.

Here's a sure winner from FORD:

Ford pays half your fuel bills for a full six months (or 400 tractor hours) on the purchase of any new Ford or Fordson diesel tractor.

This offer, made possible by the amazing fuel-saving performance of these low-priced diesel tractors, expires March 31, 1961.

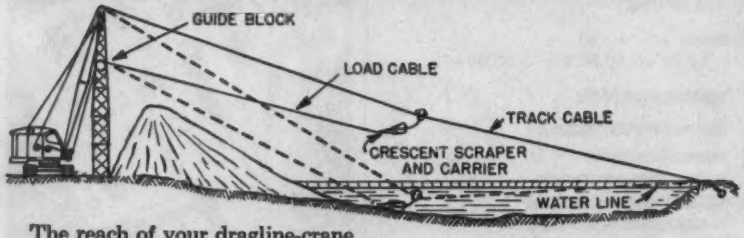
No "hidden" price increase... no tricks of any kind. See your Ford Tractor Dealer for all the money-saving details!

Tractor and Implement Division, Ford Motor Company, Birmingham, Michigan

Ford TRACTORS EQUIPMENT

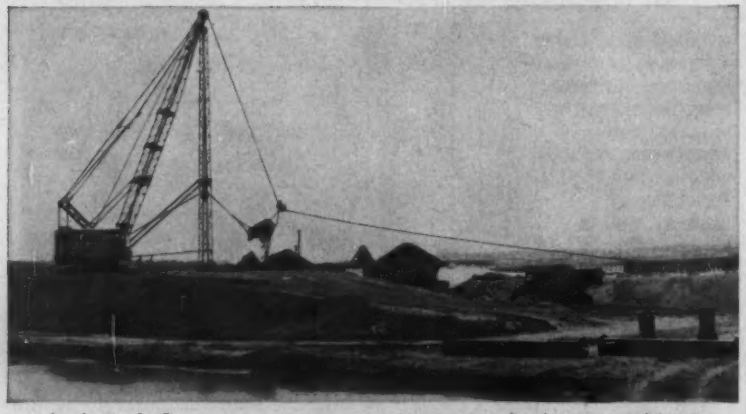
Circle 53 on Reader Service Card

Crescent Scraper and Track Cable Extends Dragline Range, Cuts Costs



The reach of your dragline-crane can be greatly extended by using its hoisting line as a track cable for a Crescent Scraper Bucket and carrier assembly. This arrangement also permits deeper digging and recovery of material from soft ground without the use of mats or the hazard of undermining the crane.

A Crescent of greater capacity than the original dragline bucket can be used because it is much lighter size for size. When the boom is supported by an auxiliary strut as shown in the drawing, a Crescent Scraper Bucket of still greater size can be used.



▲ *A 4-yd. Crescent scraper reclaiming material from an underwater pile 300 ft. away. The bottomless scraper hauls at ground level to an elevated hopper over truck roadway. Crescent is lifted from hopper and gravity returned to pile by tensioning the track cable. The cable is moored to a float anchored about 500 ft. out in the bay.*

◀ *Crescent returning 350 ft. to excavation point. Maximum return by gravity is provided by holding the crane boom almost upright. Track cable is hooked to dozer and two anchors. Dozer is used to laterally shift tail assembly.*

•

Write or call giving make, model number and boom length of your dragline-crane. We will tell you what size Crescent is best suited to your equipment. Field Report No. 231 and Catalog J give more information on Crescent and crane setups.

SAUERMAN BROS., INC. 612 SO. 28th AVE. BELLWOOD, ILL.
Linden 4-4892 • Cable CABEX—Bellwood, Illinois

Crescent Scrapers • Slackline and Teamline Cableways • Derrollo Blocks

Circle 54 on Reader Service Card

CONSTRUCTION BUSINESS . . .

continued from page 44

one-half of their total unobligated as of January 1. Of these, a few apparently hadn't used much of their fiscal '61 aid during July-December '60. Massachusetts, for example, had obligated only 18% of its total; Delaware had 95% left; Florida's unused balance was 72%; while in both Pennsylvania and Virginia the balance was 70%.

Virginia, incidentally, claims that it wasn't told soon enough about the advanced availability of federal-aid funds, and that it hasn't enough plans ready now to take advantage of the opportunity to speed contracting. "If we had known six months ago" the department would now be able to spend at a faster clip, says the fiscal director of Virginia's highway department.

For the 50 states and District of Columbia, 53% of 1961 federal-aid funds was not obligated as of January 1. This means that the states can claim nearly 15% more federal aid for highway construction, engineering and right-of-way in the January-June 1961 period than they actually obligated in July-December 1960.

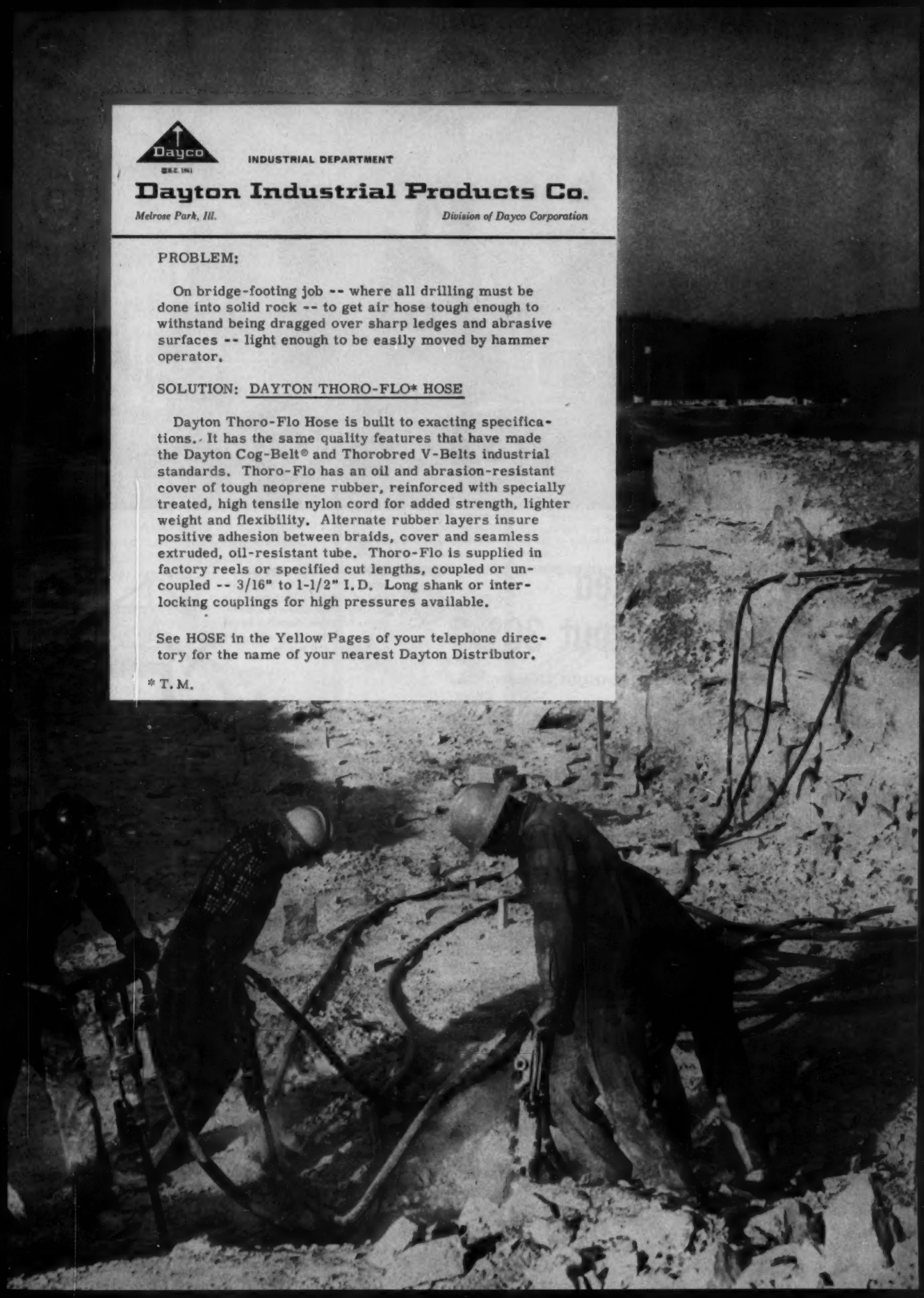
February contracts slacked off sharply from the January pace. Awards averaged $55 million for the first three weeks of last month. This indicates that February as a whole won't exceed last year by much, if at all.

Despite the slowdown last month, the cumulative total is running 35% ahead of last year. Unless the states run into financing troubles—sagging revenues and higher interest rates in the capital markets—the highway and bridge market should hold on to its healthy lead over 1960 and set a new high of at least 12% more new contracts this year than last *(CM&E, Jan. 1960, P. 57)*.

SOME BIG CONTRACT AWARDS OF THE MONTH

Williams & Burrows, Inc., Belmont, Calif. Construct hydroelectric power house on Stanislaus River, Calif. Pacific Gas & Electric Co., San Francisco. Total cost. $12,000,000.

continued on page 57



Dayco

INDUSTRIAL DEPARTMENT

Dayton Industrial Products Co.

Melrose Park, Ill. *Division of Dayco Corporation*

PROBLEM:

On bridge-footing job -- where all drilling must be done into solid rock -- to get air hose tough enough to withstand being dragged over sharp ledges and abrasive surfaces -- light enough to be easily moved by hammer operator.

SOLUTION: DAYTON THORO-FLO* HOSE

Dayton Thoro-Flo Hose is built to exacting specifications. It has the same quality features that have made the Dayton Cog-Belt® and Thorobred V-Belts industrial standards. Thoro-Flo has an oil and abrasion-resistant cover of tough neoprene rubber, reinforced with specially treated, high tensile nylon cord for added strength, lighter weight and flexibility. Alternate rubber layers insure positive adhesion between braids, cover and seamless extruded, oil-resistant tube. Thoro-Flo is supplied in factory reels or specified cut lengths, coupled or uncoupled -- 3/16" to 1-1/2" I.D. Long shank or interlocking couplings for high pressures available.

See HOSE in the Yellow Pages of your telephone directory for the name of your nearest Dayton Distributor.

* T.M.

"how we boosted backhoe output 30%"

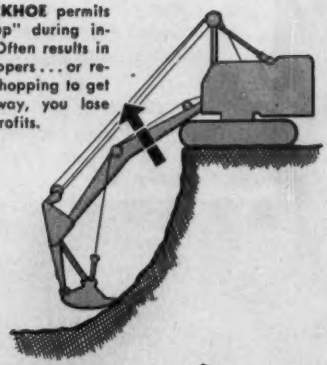
Robert Enright, Enright Constr. Co.

This story had its beginning last year, when AMERICAN HOIST announced an important break-through in backhoe design . . . the POSITIVE-PRESSURE backhoe. The idea of having a boom that wouldn't "ride up" during inhaul of dipper made a lot of sense to Enright. He investigated . . . and bought an AMERICAN 300 Series POSITIVE-PRESSURE backhoe. Now in his second season with the machine, he says, "No matter how deep we're digging, even in tough shale and rock, the boom stays down and we get a heaped dipper every pass. This kind of action helps *increase our production at least 30 percent and sometimes more.*"

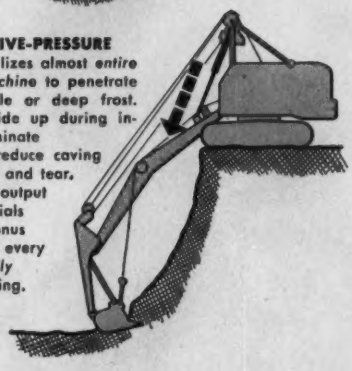
For all its advantages, POSITIVE-PRESSURE is remarkably simple and trouble free. No pumps, no powered mechanisms of any kind. Fully automatic. You'll agree it's the biggest advance in backhoe design in years! Only AMERICAN has it.

B-717

ORDINARY BACKHOE permits boom to "ride up" during inhaul of dipper. Often results in partially-filled dippers . . . or requires repeated chopping to get a bite. Either way, you lose production and profits.



NEW, POSITIVE-PRESSURE BACKHOE utilizes almost *entire weight of machine* to penetrate hardpan, shale or deep frost. Boom *can't* ride up during inhaul. You eliminate chopping . . . reduce caving . . . save wear and tear. You increase output in easy materials too . . . get bonus yardage with every pass, *especially* on deep digging.



AMERICAN

AMERICAN HOIST and DERRICK COMPANY
ST. PAUL 7, MINNESOTA

EXCAVATORS ½ to 4½ yds.	**DERRICKS-HOISTS** to 800 tons	**FORGED FITTINGS FOR WIRE ROPE AND CHAIN** (Crosby-Laughlin Div.)
CRANES 12½ to 110 tons	**REVOLVER CRANES** to 400 tons	

Circle 55 on Reader Service Card

Circle 56 on Reader Service Card

CONTRACTS AWARDED...

continued from page 54

Foster-Wheeler Corp., New York. Construct copper and zinc plant at Mindanao Island, Philippines. Marindurque Iron Mines, Manila. Total cost estimated at $23,000,000.

S. A. Healy Co., and **C,K,F-M** of Palmdale, Calif. For six-mile stretch of Golden State Freeway, Los Angeles County. California State Div. of Highways. $12,625,000.

Quemont Construction Ltd., and **Charles Duranceau, Ltd.**, Montreal, Que. For first section of concert hall and garage, LaGrange Salle, Montreal, Que. Sir George Etienne Cartier Corp., Montreal. $7,333,200.

Lloyds Construction Co., Chicago, Ill. Build twin-tower apartment at Chicago. United Insurance Co. of America, Chicago. $6,000,000.

Electronic and Missiles Facility, Inc., New York. Federal courthouse addition and post office renovation, Philadelphia, Pa. General Services Administration, New York. $5,735,000.

Wigton-Abbott Corp., Plainfield, N.J. Construct research center at Clarkstown, near New York City. St. Regis Paper Co., New York. $3,000,000.

Norair Engineering Corp., Washington, D.C. For treatment facilities and cafeteria at St. Elizabeth's hospital, Washington, D.C. General Services Administration, Washington, D.C. $3,189,000.

Peter Kiewit Sons' Co., Arcadia, Calif. Build office building in San Diego for Irvin J. Kahn of San Diego. $6,500,000.

W. F. Maxwell, Fontana and Matich Construction Co., Colton, Calif. Construction six-lane freeway in San Bernardino County, Calif. California State Div. of Highways. $6,839,180.

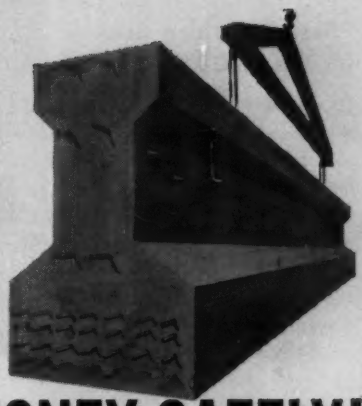
S. A. Healy Co. and Gargaro & Co., Detroit, Mich. Build tunnel drain, Southfield and Oak Park, Mich. Oakland County Drain Commission, Pontiac, Mich. $3,545,342.

Dependable

Richmond

products for

prestressed concrete



SAVE TIME & MONEY SAFELY!

Richmond Strand Deflection and Push Down inserts for depressing strands. Special units can also be manufactured to suit individual needs.

Richmond Chairs and Spacers for void supports and spirals in prestressed piles and beams.

Richmond Inserts for connection of cast-in-place diaphrams to prestressed girders.

Richmond Inserts for anchoring to or hanging from prestressed members.

Richmond Extended Coil Tyscrus for lifting prestressed beams and girders. (2 & 4 strut)

Richmond Inserts for anchoring guard rails to prestressed girders.

Phillips Self-drilling Concrete Anchors for anchoring to any concrete members after concrete has set.

Richmond Offset Free-Fit Hanger Frame-Tys used to hang forms from prestressed "I" beams.

Richmond's Columbia-matic "8", fully automatic stud fastener for secure and safe fastening into concrete.

Shown here are a few of the many Richmond-engineered products for the prestressed concrete construction industry. For more information about them, or help with any specific concreting problem, write to:

Richmond SCREW ANCHOR CO., INC.
INSIST ON RICHMOND
AND BE SURE IT'S RICHMOND
ASSOCIATE MEMBER PCI

MAIN OFFICE: 816-838 LIBERTY AVENUE, BROOKLYN 8, N. Y.
SALES OFFICES, PLANTS & WAREHOUSES: FT. WORTH, TEX. ATLANTA, GA.—LAUREL, MD.—ST. JOSEPH, MO.—WALTHAM, MASS. **IN CANADA:** ACROW-RICHMOND, ORANGEVILLE, ONT.

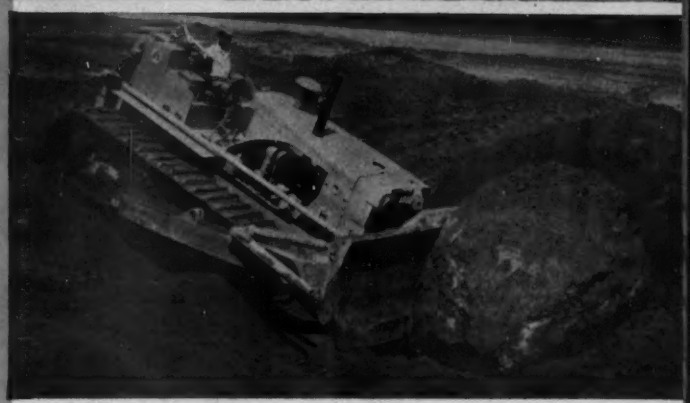
1911-1961 *50 YEARS OF PROGRESS*

Circle 57 on Reader Service Card

"Rock is nothing new for this TD-25"

Contractor Preston Cottrell, Kalispell, Montana, owns this International TD-25 that's roughing out a mountain logging truck haul road on swampy, rocky, machine-mauling terrain. The TD-25's operator, William Clark, comments: "This '25' worked in rock all summer—works well in rock; has got lots of 'soup.' And it's got the special advantage of having the power on both tracks all the time." Owner Cottrell adds: "Best of all tractors I've ever used for road-building."

How Owners rate Planet-powered "25's" COMPARED TO THE CRAWLERS THEY REPLACED!



"TD-25 outworks any rig of its size we've used"

"Our TD-25 does more work in a day than any competitive tractor its size we've ever used," reports Gen. Supt. G. H. Crouch, for W. Owen Flowe & Son's contracting firm, Charlotte, No. Carolina. "Live track steering and over-all balance enabled the TD-25 operator to grade within .02% of the 24-degree, 1,000-foot long track slopes—within four hours. A motor grader would have taken two days to do this same job. TD-25 live track Planet Power-steering gives accurate load control with no side slip." Here, TD-25 is digging out a 20-ton boulder—a step in building the huge new Charlotte motor speedway racing track.

"TD-25 Planetary steering benches rock in 2nd gear"

"Planet Power-steering makes the TD-25 especially good for benching and bank-cutting—and it really takes the passes of rock in second gear (where 1st gear is usual with clutch-steered rigs)," states Kinney Hamm, for Albert Brothers Contractors, Roanoke, Va. "I can operate the '25' with my little finger, and with confidence." This Albert Brothers' TD-25 is blading huge loads of shot rock aside on a hilltop cut of an Interstate Project near Buchanan, Va.

"Better pusher control on all terrain"

"TD-25 planetary steering gives the operator better pusher control of the scraper load in all types of terrain conditions," states Grady B. Stancil, Stancil Bros. Construction Co., Snellville, Ga. "TD-25 has no match for work on grades as it will back up slopes and maneuver." View shows Stancil TD-25 pushing an International Payscraper on state highway job near Lawrenceville, Ga.

"Our TD-25's save time and dynamite in rock"

"The road-building capacity of our TD-25's is something you must see to believe," declares Contractor Russell Train, Myrtle Point, Oregon. "They cut the roads out faster—save time and the cost of dynamite ripping through rock strata we always had to blast before." Here's one of owner Train's TD-25's benching out type EE Forest Service roads that will be rock-coated for all-weather use.

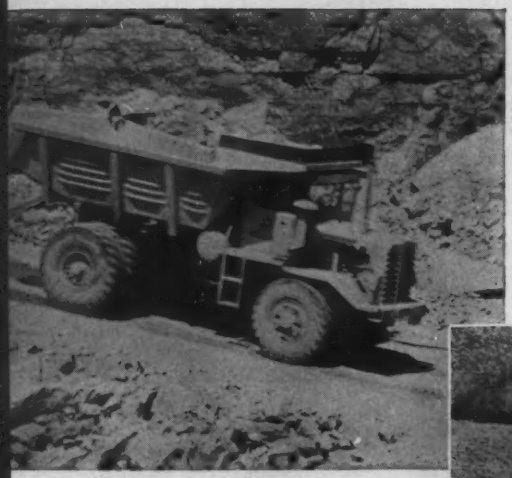
See how "live track" TD-25 Planet Power-steering gives you full-power momentum—and eliminates load-limiting "dead-track drag." Try on-the-go, Hi-Lo power-shifting that ends "gear-shift lag." Compare how this power-steering, power-shifting combination teams with 230 work-slugging turbocharged Diesel hp—to outwork king-sized clutch-steered crawlers job after job! Let your International Construction Equipment Distributor demonstrate the TD-25!

International® Construction Equipment

International Harvester Co.,
180 North Michigan Ave., Chicago 1, Illinois
A COMPLETE POWER PACKAGE

THE STEEPER THE GRADE...

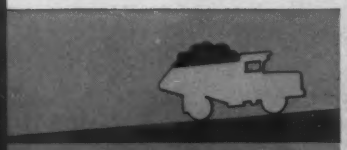
the more "extra" loads a cycle-gaining Payhauler® gives you



Of all three 27-ton off-road haulers, only the International 95 Payhauler gives you the weight-shedding, strength-multiplying advantages of the rock-ribbed, corrugated body. Only the "95" is plus-powered by the 375-hp DT-817 turbocharged Diesel. And only the "95" gives you an exclusive combination of power-control, safety, and comfort features that turns haul-speed advantages into extra haul-cycles! *Prove to yourself* what comparative grade charts and work-tally sheets show! See your International Construction Equipment Distributor for a Payhauler demonstration!

Positive Torqmatic braking gives the operator complete control of this fully-loaded "95"—builds confidence to use the highest practical haul speeds, even when hauling down the steepest grades. "One-hand" power-steering teams with finger-tip brake lever control to give course-holding, grade-matching downgrade hauling stability. Torqmatic braking, standard equipment on the power-shift "95," is a Payhauler *plus*—furnished in addition to the standard, internal-expanding wheel brakes—to help give you "*extra*" loads on tough hauls!

Grade charts prove: only the 95 Payhauler delivers



Total grade and rolling resistance, 10%

Hauler	Hauling Speed (mph)	Payhauler Advantage
95 Payhauler	10.2	
Competitor X	8.0	27.5%
Competitor Y	8.0	27.5%

Total grade and rolling resistance, 11%

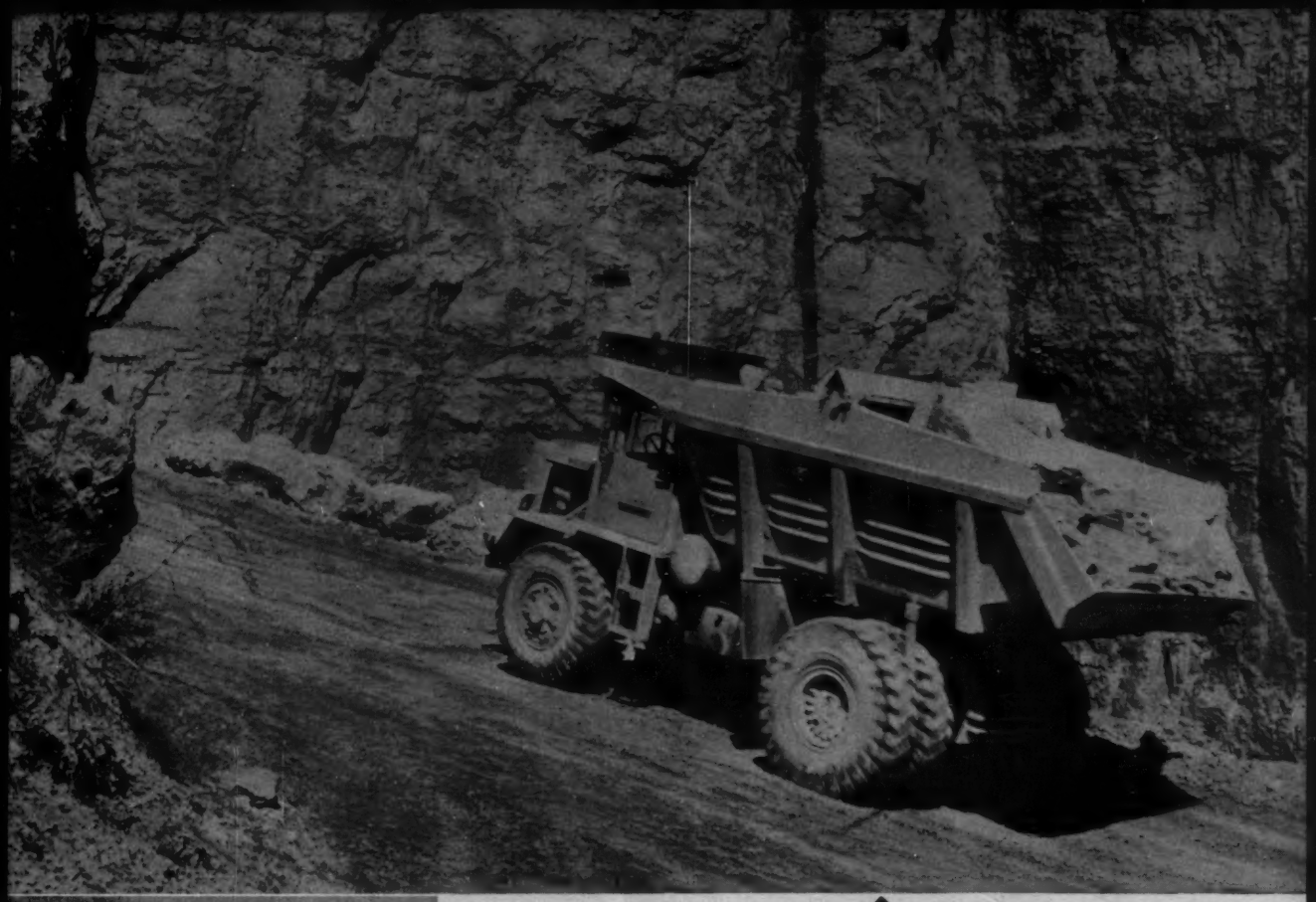
Hauler	Hauling Speed (mph)	Payhauler Advantage
95 Payhauler	10.1	
Competitor X	7.0	44.3%
Competitor Y	7.5	34.7%

Total grade and rolling resistance, 12%

Hauler	Hauling Speed (mph)	Payhauler Advantage
95 Payhauler	9.0	
Competitor X	6.3	42.9%
Competitor Y	7.0	28.6%

Total grade and rolling resistance, 13%

Hauler	Hauling Speed (mph)	Payhauler Advantage
95 Payhauler	7.9	
Competitor X	5.5	43.6%
Competitor Y	6.0	31.7%



Two 65 Payhauler rigs speed full 19-ton loads of dolomite from quarry to crusher—up a maximum climb-out grade of 16%. Powered by the 250-hp naturally aspirated "817" Diesel—equipped with weight-shedding corrugated steel body—the "65" consistently hauls 30% faster than competitive rigs! Price the "65"—you pay less per hp, less per struck yard and per ton of capacity than for competitive rigs!

Three 95 Payhauler trucks replace five competitive haulers in a large Chicago-area quarry. Reasons: fully-loaded "95's" haul upgrade as much as 44% faster than the competitive make—give fast, "big-target" lodding—dump in only 11 seconds with exclusive power-up and power-down hoist action. And the cycle-gaining "95's" with Torqmatic power-braking, power-steering and power-shifting deliver "extra" loads on steep hauls!

International Harvester Co.
180 North Michigan Ave.
Chicago 1, Illinois
A COMPLETE
POWER PACKAGE

International® Construction Equipment

"extra" loads . . . over any 27-ton competitor

Total grade and rolling resistance, 14%

Hauler	Hauling Speed (mph)	Payhauler Advantage
95 Payhauler	7.2	
Competitor X	5.0	44. %
Competitor Y	5.5	30.9%

Total grade and rolling resistance, 15%

Hauler	Hauling Speed (mph)	Payhauler Advantage
95 Payhauler	6.4	
Competitor X	4.8	33.3%
Competitor Y	5.3	20.8%

Total grade and rolling resistance, 16%

Hauler	Hauling Speed (mph)	Payhauler Advantage
95 Payhauler	5.8	
Competitor X	4.6	26.1%
Competitor Y	5.0	16. %

Total grade and rolling resistance, 17%

Hauler	Hauling Speed (mph)	Payhauler Advantage
95 Payhauler	5.4	
Competitor X	4.5	20. %
Competitor Y	4.9	10.2%

CHEVROLET
60

CHEVROLET
60

CHEVROLET
60

1
2
3
4
5
6
7

HERE'S BONUS BACKBONE BRAWN—CHEVY TRUCKS SPECIALLY EQUIPPED FOR EXTRA-SEVERE DUTY!

They're built to blaze trails lesser trucks can't travel—to bull their way through brutal back country with king-sized loads—to stand up to terrain that can turn ordinary trucks into scrap iron before their time. Chevrolet's new heavy-duty off-highway chassis equipment option is good news for off-road operators everywhere. Now you can get the profit-protecting advantages of years-ahead Independent Front Suspension ride combined with the extra chassis beef your kind of work demands. The tougher your task, the more you'll appreciate the strength and durability built into this one!

■ **EXTRA BEEF FOR BRUTAL DUTY:** That beaver emblem on the sides of Chevrolet's new extra-duty-equipped medium- and heavy-duty trucks will be showing up more and more where the jobs are toughest—where getting the work done demands performance beyond the normal call of duty. These Chevies look the same on the outside, but there's a big difference down deep. More than just an add-on or build-up package, Chevrolet's new off-road equipment option combines maximum-duty suspension components with a special-built frame that's engineered for all-out ruggedness in every detail. A frame with K-braced ladder-type construction that delivers extra torsional resilience to soak up brutal beatings.

Here's what you get: ❶ Heavy-duty 4,000-lb. torsion bars up front, anchored right at the frame K-brace crossmember for sturdy support. (Anchors are truss-rod-connected under the frame for an extra margin of strength.) ❷ Massive K-brace crossmember between the torsion bar anchors, specially designed for maximum structural rigidity and fabricated of high-tensile-strength steel. ❸ Extra-heavy side rails, of full quarter-inch stock, with full-length L-plate reinforcements. ❹ Heavy-gauge alligator-jaw crossmembers in frame midsection that combine high strength with give-and-take resilience. ❺ A massive tubular crossmember, anchored in extra-heavy cast steel brackets at the rear spring front hangers. ❻ Maximum-duty 11,500-lb. rear springs of standard variable-rate design, plus the extra margin of 2,000-lb. auxiliary springs. And ❼ a massive double channel crossmember at the spring rear hangers heavily gusseted fore and aft—the finishing touch of rock-ribbed ruggedness between roughest roads and heaviest loads.

If yours is a truck-killing job, this new option is tailor-made for you. You can get it on any of four medium- and heavy-duty models to match your needs best, and you'll be surprised at how little it costs. See your Chevrolet dealer right away for full details. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

Availability: Heavy-Duty Off-Road Chassis Equipment

Model	Wheelbase	Cab-to-Axle	Max. GVW	Front Suspension Capacity	Rear Axle Capacity
C6303	157″	84″	19,500 lbs.	5,000 lbs.	15,000 lbs.
C6503	175″	102″	19,500 lbs.	5,000 lbs.	15,000 lbs.
C7303	157″	84″	23,000 lbs.	7,000 lbs.	16,000 lbs.
C7503	175″	102″	23,000 lbs.	7,000 lbs.	16,000 lbs.

1961 CHEVROLET STURDI-BILT TRUCKS

CHEVROLET

Circle 63 on Reader Service Card

a NEW moto-crane® already job proven

45-TON MC-545

New Turntable Design
Double Boom Hoist Drums
Power Boom Lowering
150 ft. Crane Boom
Shear-Ball® Mounting
8x4 Carrier—220" Wheelbase
15 Speeds to 40 MPH
Air-Power Shift
Power-Set® Outriggers
Standard

This brand new, 45-ton Moto-Crane, Model MC-545, has caught on fast with progressive, profit-conscious contractors. Already many of them are at work across the country. One prominent New England contractor has four in use.

Big capacity—correct combination of carrier speeds and weight reduction for highway travel—exclusive Power-Set Outriggers as standard for quickest on-the-job maneuvering—provide the mobile workability needed for today's jobs.

And look at the operating features. A new, square-tubular-chord boom for lengths to 190 ft. with tip extension. New, double hoist drums for 10-part derricking. Clutch controlled, power boom lowering and derricking add increased precision. Swing shaft and drums on anti-friction bearings. And the 10-year warranted Shear-Ball turntable connection eliminates adjustment, maintenance and lubrication problems.

See your nearby Lorain distributor. He can tell you the full story on this latest Lorain—or show you one at work.

THE THEW SHOVEL COMPANY, LORAIN, OHIO

LORAIN

DOES MORE, FASTER, FOR LESS

PLANTS in Lorain and Elyria, Ohio.

PRODUCTS—Power shovels, cranes, draglines, clamshells, and hoes on crawlers from ⅜- to 2½-yard capacity · Cranes from 7 to 80 tons . . . on crawlers, and as rubber tire Moto-Cranes, and Self-Propelled Cranes · Rubber tire front-end Moto-Loaders in 11,000-lb. to 18,000-lb. lifting capacity.

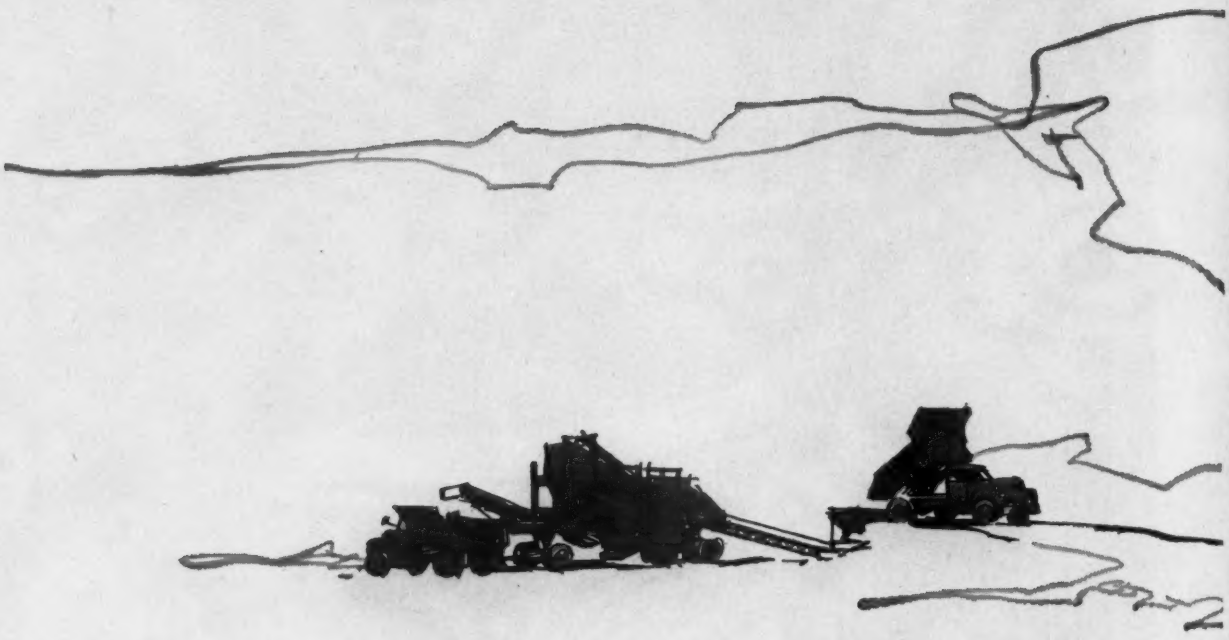
OUTLETS—Lorain products sold and serviced by 249 distributor outlets throughout the world.

Circle 64 on Reader Service Card

ASCE Picks Jet-Age Idlewild Airport as Project of the Year

• The American Society of Civil Engineers selected New York International Airport as the outstanding civil engineering achievement of 1961 because of its role as a laboratory in the development of air facilities for the jet age. The Port of New York Authority has spent a total of $233 million on new construction at the airport since 1955. The vast modernization project is now about 75% complete. The 4,900-acre complex includes five runways and 20 mi of taxiways sprawled around Terminal City at its core. This city-within-a-city will have 10 terminals for handling passengers. Seven are now complete. Another now under construction is the Trans-World Airlines Terminal (right), a forming nightmare.

THE USEFULNESS OF A LIMA



HOW TO KEEP A JOB ON SCHEDULE

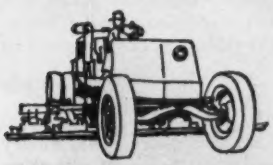
You need machines that work...and *keep* working! Nothing's more useless than a shovel or crane that's "down" when you need it most. Limas have a reputation for staying on the job. They're predictable because they *do* the work you schedule for them. You can count on them. Limas are better built, better engineered for dependable high production, trouble-free operation; favored by users everywhere to outdig, outlift and outlast other makes. Lima quality features include:

- Precision air control—insuring maximum production under the most adverse conditions; permitting feel of the load, instant response.
- Antifriction bearings at all important bearing points, including drums, brake and clutch housings.
- All gears, smaller parts and shafts are flame or induction hardened for longer life.
- Versatility—insuring *plus* value. Limas are not adaptations of single-purpose machines. Each is designed and built for top efficiency, long life with any front end.
- Design flexibility assuring complete transportability; easily dismantled to legal weights.

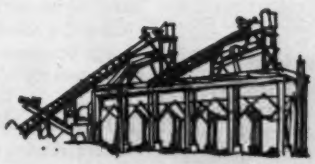
Call your Lima distributor and arrange to see a Lima at work. Or write us for details.

6101

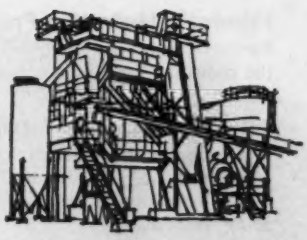
There's a Lima type and size for you—shovels to 8 yd.; crawler cranes to 140 tons, truck cranes to 80 tons, wagon cranes to 75 tons; draglines variable. Interchangeable front ends. Gasoline, diesel or electric power.



LIMA MODEL D ROADPACKER —Six vibrating shoes consolidate fast, deep for profitable single-course construction; available in 12-shoe Super model.



LIMA AUSTIN-WESTERN portable and stationary crushing, screening and washing equipment; including jaw crushers, roll crushers, feeders, screens, elevators, conveyors, bins.



LIMA MADSEN ASPHALT PLANTS —available in models with batching capacities from 1000 to 10,000 lb.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA Construction Equipment Division · Lima, Ohio

BALDWIN · LIMA · HAMILTON

Circle 67 on Reader Service Card

HOW PARLON COMPOUNDS INCREASE CONCRETE PERFORMANCE

Eliminate Hydration Problems

Parlon treating compounds seal the surface and retain the moisture for complete reaction and maximum strength.

Offer Immediate Rainfall Protection

Parlon compounds provide rainfall protection within ½ hour after application, developing sufficient hardness and film integrity to keep the fresh concrete from being washed away.

Seal From Within For Long Periods

Parlon solutions are applied at very low solids, penetrate the surface structure of the concrete, and develop an integral seal.

Resist Alkali Damage

Only Parlon chlorinated rubber used with chlorinated resins or other special alkali-proof resins will withstand alkali indefinitely and thus allow an immediate, permanent bond of adhesives or paint films to the concrete surface.

Eliminate Waxy Film

Where treating compounds are now being used, money savings can result from surface treatment with these Parlon-based products. The Parlon film enables the concrete to cure to a strong slab and sandblasting before applications of paints or joint sealants is not necessary.

Treating compounds based on Parlon, chlorinated rubber made by Hercules, are now available from a number of manufacturers. Ask your regular supplier, or write us.

Cellulose Products Department

HERCULES POWDER COMPANY

INCORPORATED

Hercules Tower, 910 Market St., Wilmington 99, Delaware

CR61-2

Circle 68 on Reader Service Card

Circle 69 on Reader Service Card ➤

CATERPILLAR REPORTS

On the following pages:

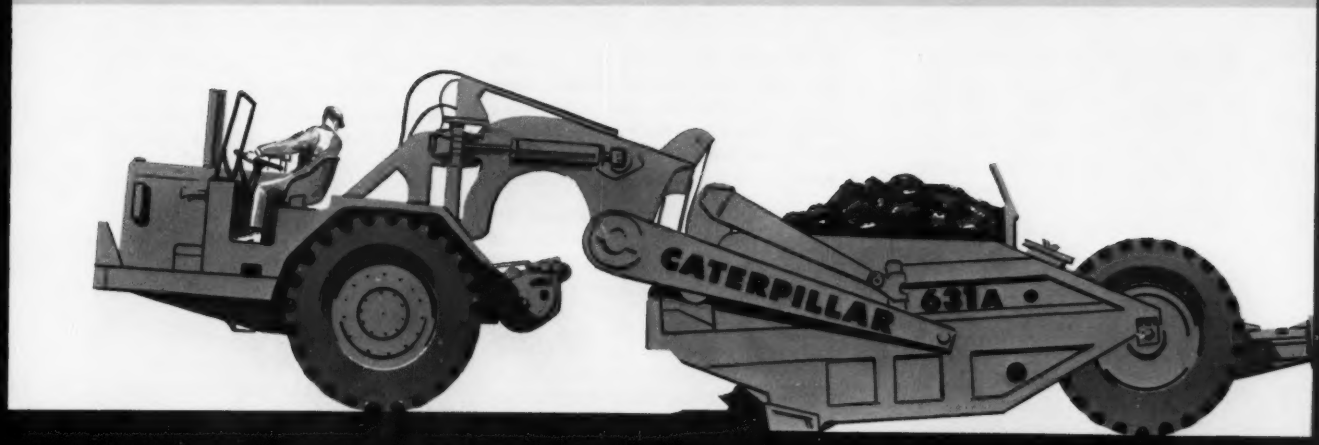
Two Operators Try the New 630 and 631

How a $2,000,000 Business Started with 4 Used Rigs

The "New" Wheel Loaders That Are Actually 7 Years Old!

What You Don't See Can Hurt You

"We Almost Bought Another Make Machine . . ."



New four-wheel 630 . . . 420 HP (max. output) . . . 41.5 MPH . . . 28 cu. yd. heaped (21 cu. yd. struck)

Two operators try the

Does the new power shift transmission lessen fatigue and increase production? How's the

A. V. "Buck" McCurley

Operator 18 years
Tells about the 631

"You asked me to give the 631 the works. I did.

"And let me say right off I found power shift great. I didn't have to work so hard to keep the tractor rolling at top speeds up grades, through soft spots and on the straightaway. And with those three automatically selected drives for each of the three speed ranges, it has better speed selection than any other rig I've seen.

"When I start out in the cut in load range, the scraper stays right with the pusher—I don't pull away every time I raise the bowl to pump in a few more yards. When the scraper's packed full, I just slip the shift lever into 1st range, and feel the push of all those horses. Moving like this, it seems to take off in direct drive. On a dead start, it automatically shifts to direct drive in about 15 feet. It shifts easy, but I know when it happens. I feel the push in the seat when it accelerates. No jar—no thump—just an easy push.

"It's easy to tell when to move the shift lever. Just check the dial. It shows when to shift, up or down. And with the way the shiftbox is cut, it's easy to shift—just move the lever into the next corner and it's right where it belongs.

"I notice I travel faster than with a straight shift machine. When you run that kind of rig hour after hour, you don't shift every time you hit a grade or soft spot—that wears you out. But this power shift 631 takes care of that for you. For instance, say I'm running down the road and hit a soft spot. Or when I pull on the fill. The rig is going to slow down. This transmission automatically shifts down at the right time—and I'm under way at the best speed I can make.

"How does the 631 work on a grade? Well, with an oversize load I stopped it part way up a 7% slope, about 200 feet from the top. The roadbed was solid, with a little loose gravel on it. I put it in 1st range, and stepped down on the accelerator. No spin or bucking! The tires just took hold and up we went. It picked up the load right away, and in less than 20 feet it *automatically* shifted up to direct drive. By the time I reached the top it had automatically shifted to overdrive and was ready for me to shift into 2nd range as I topped the rise. That's the kind of power I like to feel in a tractor!

"I also tried this rig on a rough road at high speed, just to see what would happen to this automatic shifting when the machine started to bounce. On other power shift machines, I've felt that wild surging as the weight comes off the drivers and the transmission speeds up, then slows down as the weight comes back on. But not with this one. I went right over the bumps. With that solid drive it stayed right in gear without that

New two-wheel 631...420 HP (max. output)...31.2 MPH...28 cu. yd. heaped (21 cu. yd. struck)

new 630 and 631

new air-actuated cable control? Here's firsthand word from A. V. McCurley and L. H. Rife

surge. I kept safe control and *high speed.*

"To sum it up, I don't have to work as hard with this new machine, but I get more production at the end of the day. The 631 works in the highest gear possible for job conditions, to move the loads fast."

Leon H. Rife
Operator 20 years
Tells about the 630

"Power shift isn't the only big thing on these new machines. Take the new air-actuated cable control, for instance. (It's on the 631, too.) It's another muscle saver. Just a short pull—about three inches. I understand I'm just working an air valve, so there won't be any wear to loosen linkage. And it's so easy to pull. I'd say it's about 50% easier than the old one. That means a lot when you're picking up a load and dumping it every few minutes. This makes it sound like maybe I don't have real control of the cable. But there's some feel built into this unit so you can feel the strain on the cable.

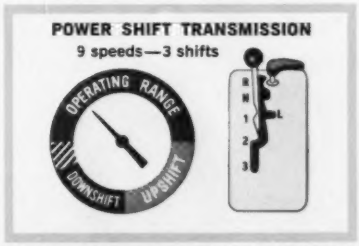
"I noticed another thing. I don't seem to ride the clutch any more. I guess I used to because it took so much to pull the lever, and it traveled so far after it got worn, that I never really let go of the control lever when loading or dumping. But now this new Cat unit is either in or out. This should make it last a lot longer—cut down repairs.

"That new scraper is a humdinger, too. I don't know what's doing it. Maybe part of it is the new larger tires that raise the rear of the bowl a little more. But it loads better and faster. The dirt seems to boil up all the way across the bowl. And the front end fills up before the dirt starts spilling out. I've been getting full loads in clay—I mean every corner to the top—in a little over 20 seconds with just a single D9 pusher.

"There is one change in the scraper I really like. They raised those bowl lift sheaves about six inches. Now when I have to pump load, the material doesn't build up and get into the sheaves. It really cuts down on cable breakage.

"Mechanics tell me it should be easy to service these machines, too, because of the unit construction which allows them to work on all major components without disturbing others.

"There are a lot more features, too—you just have to work one of these rigs for a while to appreciate them."



One lever gives operator instant selection of three speed ranges . . . dial indicator tells him when to shift. Within each range, transmission automatically shifts to torque divider drive, direct drive or overdrive to match conditions.

Flat Bottom Ditch Cut Twice As Fast by No. 14 Motor Grader

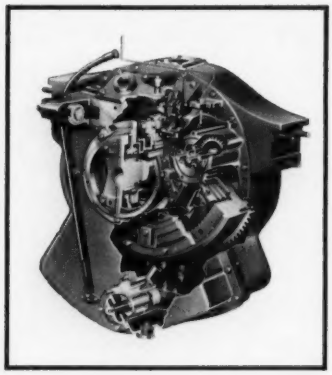
JOB DESCRIPTION:	No. 14 and No. 12 Motor Graders were each cutting flat bottom ditches along two miles of a highway resurfacing job.
LOCATION:	Highway 116, between Metamora and Roanoke, Ill.
OWNER:	R. A. Cullinan & Son, Tremont, Ill.
PURPOSE OF STUDY:	Compare production of No. 14 and No. 12.
RESULT:	Both machines worked along their respective two-mile stretches of highway for the same length of time. The No. 14 completed its job except for one final pass. But the No. 12 was less than half finished. It is conservative to say the No. 14 did the same work twice as fast as the No. 12!

Comments owner R. A. Cullinan, "The production difference on this job was unusually good—but my new No. 14 always outworks the productive No. 12 by at least 50% with only a slight increase in cost."

Many features contribute to this production advantage in the big No. 14: turbocharged 150 HP Cat Diesel Engine; power-assisted brakes and steering; new mechanical controls for fast blade response, precise adjustment; curved side shift rack for widest range of blade positions without adjusting linkage; and the exclusive Caterpillar oil clutch. When you need more production than the dependable 115 HP No. 12 can give, let the powerful No. 14 take over.

THE INSIDE STORY

Why the Cat Oil Clutch Is Such a Money-Saver



If you've owned old-style equipment, you're familiar with the problems of dry-type clutches—frequent adjustments and replacement, and "fade" in hard work. Hard work creates heat, and heat is the biggest enemy of clutches. While other companies have tried to make their clutches live with it, Caterpillar engineers solved the problem by removing the heat.

Parts in the famous Cat oil clutch run constantly in oil pumped from the crankcase. Thus clutch temperatures can never rise above engine temperatures to cause fade and glazing. As the clutch discs move to the engaged position, facings are oil-protected to prevent wear. As they become engaged, pressure between the plates forces all oil from the friction surfaces to eliminate slippage.

Millions of hours of hard work have proved the facings of the oil clutch undergo very little wear. In 1000 hours' operation you can expect wear of only about .0025 inch—less than the thickness of a human hair. In fact, wear is so slight the clutch operates up to 2000 hours without *adjustment*—and almost never needs replacement.

The oil clutch is standard equipment on all Cat Motor Graders and direct drive D9, D8, D7 and D6 Tractors. It is optional on the D4.

Roy Rash (right) discusses job progress with foreman B. F. Roberts

How a $2,000,000 business started with 4 used rigs

From a road job that paid $1.50 a day in 1930 to head of his own $2,000,000 construction company today—that's a capsule version of Roy C. Rash's rise to success. When he was asked how he accomplished it, this husky six-footer said: "It just happened. There's no secret formula. I'm just lucky to have good men and good machines."

A closer look at his background shows that a lot more than luck helped him get ahead. There's a solid backlog of good "old-fashioned" American virtues—hard work, long hours, thrift, drive and initiative, plus rung-by-rung experience in dirt moving that started at the bottom 30 years ago with the Hood County (Texas) Road District. He was 16 then, and his first operating job was on a Caterpillar Thirty Tractor that pulled a grader.

Other early operating experiences include stints on an RD8 and a No. 12 Motor Grader for the Chadwick & Williams Contracting Company. Later, he became a foreman and soon was a superintendent.

In 1943, Roy went into business for himself, starting the Border Construction Company. Up to then, his preference for Caterpillar was largely sentimental. But when it came time to buy his own machine, he knew sentiment couldn't influence his decision. He had to have machines that would make money or he would go broke. And since the capital he'd been able to save was limited, he had to get the best deal he possibly could.

Guided by this reasoning and his experience with earthmoving machines, he still chose Caterpillar, making a down payment for three used D4s and a used D7.

With these used machines, Roy first concentrated on building farm ponds and oil field roads. Then he branched out to larger jobs. Currently he is working on State Highway 359. As in his early days, he relies on Caterpillar to help him make money. His Caterpillar spread consists of two DW20s, two DW15s, five No. 12 Motor Graders, three D8s, two D7s and one D6.

He still works as hard as ever, too. His 12-hour days see him discussing job progress with his superintendents and machine health with his mechanics. He also finds time to keep on top of new developments in the construction business. He can quote weight, horsepower and capacity of most major manufacturers' earthmoving machinery. He is familiar with their strong points and shortcomings. And like all contractors he is eager to talk about what should be built next.

In starting with used Caterpillar equipment, Roy did just what many other ambitious one-time operators have done and are doing now as a result of their experience and the reputation of the Caterpillar Dealer for honestly described, rock-bottom-priced machines. In fact, to take the guess and gamble out of buying used equipment, the Caterpillar Dealer offers three types of *protected* buys—"Bonded Buy," "Certified Buy" and "Buy and Try." Financing can be tailored to fit an individual's needs.

Caterpillar's wheel loader line

brand new... and seven years old!

When did Caterpillar build its first wheel loader? If you say "last year," you're just seven years off—because the first model of the 944 was actually constructed 'way back in 1953. It looked somewhat different from today's production machines, but the basic design had been created and the first Cat wheel loader was moving material.

"Compared with machines on the market at that time," says one of the engineers, "that first machine probably was every bit their equal, but we felt it did not meet all the requirements we had established for this type of vehicle."

The following three years was a period of component refinement. Then, early in 1956, the new lightweight, turbocharged diesel engine was installed in the pilot model; a few months later the perfected version of the new Cat power shift transmission was added; and later the new "live action" hydraulic system was put in.

Now the 944 was judged ready for the most extensive testing program in the industry.

For some three years, the wheel loader was put through every possible torture test at Caterpillar's extensive Peoria proving grounds. Meanwhile, in the laboratory, component parts were worked thousands of times per hour to test fatigue resistance. And at the company's southwestern proving grounds, endurance was tested in all kinds of material, from dust to rock.

In March, 1959, the first Caterpillar wheel loaders went out on private jobs—with Cat engineers on hand to keep a critical eye on operating characteristics and judge customer reaction to the units. Several minor changes in hydraulic controls and visibility resulted from this final testing period.

Result? Three wheel loaders with advanced new design and seven years of experience behind them—the 1¼ yd. 922 (80 HP), the 2 yd. 944 (105 HP) and the 2¾ yd. 966 (140 HP). Already hundreds of owners are finding these safe, dependable Traxcavators to be top producers on all their materials handling and excavating jobs.

HIGH PRODUCTION FEATURES ON ALL CAT WHEEL LOADERS—POWER SHIFT TRANSMISSION for smooth, instant shifting... OPERATOR SAFETY with lift arms and cylinders all forward of the instrument panel... BUCKET CONTROLS on the right side leaving left hand free for machine operation... AUTOMATIC BUCKET POSITIONER... DUAL BRAKES, the left neutralizes transmission to transfer extra power to bucket... LIVE ACTION HYDRAULIC SYSTEM for tough material excavation, fast lift and dump... EASY SERVICE ACCESS, seat tips forward for easy access to transmission oil filter and control linkage adjustments.

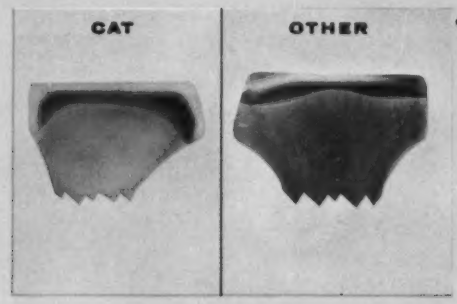
Special Report to Users of Caterpillar Equipment:

CAT CATERPILLAR

WHAT YOU DON'T SEE CAN HURT YOU

You can buy a lot of parts that *look* like genuine Caterpillar parts. Some may be cheaper initially. But they are as different as night and day when you get them in service.

Take these links, for example. They all *looked* identical when new. But see what has happened after 2000 hours on the same D8 Tractor! The two links in the center, a popular brand with induction-hardened rails, cost about 9% less than Caterpillar links originally, but showed about *50%* more wear.



The extra service you can expect from the Cat links can be seen and compared with other brands. Here are actual photos of etched cross sections of *production* links made by Caterpillar and the other manufacturer. The light areas at top show case depth and pattern of wear-resistant rail material resulting from heat treatment. See the deep, uniform wear case on top *and sides* of the Cat part? It's as hard as a good ball-peen hammer head. But in the other brand, the wear case varies both in depth and hardness . . . that's the reason why after 2000 hours the Cat-made links had worn 50% less.

Investigate and you will find superiorities for every undercarriage component built by Caterpillar. This extra quality—though it sometimes costs a little more initially—pays off by delivering many *extra* trouble-free working hours. That's why genuine Caterpillar parts cost you less per hour than other brands.

And when it's time to replace or rebuild your tractor undercarriage, see your Caterpillar Dealer. He is an undercarriage specialist with modern facilities to back him up. Get the full story on his many money-saving options and recommendations *tailored to your job conditions.* Truly CUSTOM TRACK SERVICE, designed to save you money . . . and offered only by your Caterpillar Dealer.

George and Donald De Bord, co-owners,
De Bord Bros., San Antonio, Texas

"We almost bought another make machine –then we watched a new Traxcavator with power shift transmission at work..."

When the De Bord brothers decided they needed a new front-end loader for their gravel pit operation, they looked the field over—and came close to buying another make of machine on a price basis. Then they watched it at work alongside a new Cat-built Traxcavator.

"The other machine seemed to be down most of the time," says George De Bord, "while the Traxcavator kept right on producing—and about twice as fast. That sold us, and we couldn't have made a wiser choice.

"Our new 955 loads out bank run gravel into 5-yd. trucks. Loading time per truck is about 75 seconds, with each load taking two full buckets and part of a third. The new power shift transmission makes it faster and easier on the operator. If we had them, we could load out 40 trucks an hour."

Many design improvements have gone into the new Series H machines to make them the big producers they are. Power shift transmission, for example, means that one lever gives split-second changes in speed and direction. New "live action" hydraulics provide faster lifting speed and greater lifting capacity. And the new 100 HP 955H has a big 1¾ cu. yd. bucket. Travel speeds forward range from 2.1 MPH in low first to 4.9 MPH in high second. Reverse speeds are 25% faster. Make sure you see it or the larger 2½ yd. 977H in action before you make *your* choice.

George De Bord operating the 955

For the best in new and used machines, and the best in parts and service—see your Caterpillar Dealer

CATERPILLAR

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DIESEL ENGINES • TRACTORS • MOTOR GRADERS • EARTHMOVING EQUIPMENT

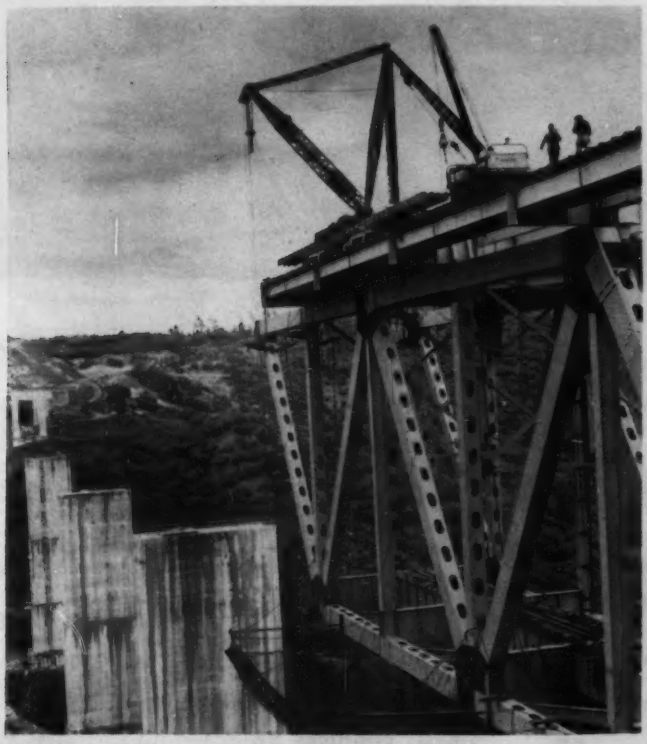
Construction News in Pictures . . .

Pipe Jungle

Crane erects one of 100 tetrahedrons that make up the frame of spired chapel for the Air Force Academy at Colorado Springs. Each 75-ft-long tetrahedron is made up of 4-in. and 6-in. seamless steel pipe manufactured by Republic Steel Corp. Mississippi Structural Steel Co. fabricates the frames with the help of special handling jigs.

Jutting Span

A stiffleg derrick perched at end of cantilever erects steel for 576-ft main span of 2,750-ft-long bridge across the Feather River at site of Oroville Dam in Calif. Piers holding the span extend 270 ft above ground. American Bridge is erecting 11,000 tons of bridge steel for joint venture contractors Stolte, Inc., and Morrison-Knudsen Co.



Capable Copter

A Sikorsky S-58 helicopter heads for the hills with a steel transmission tower in tow during construction of a power line in the Appalachian Mountains of Virginia. The contractor preassembles tower sections at a ground support area; then the flying crane takes over. The whirlybird also strings wire between towers in 10,000-ft sections with airborne reel.

Fast, accurate swings to work areas, often more than 170 feet away, were possible with exclusive Magnetorque drive.

"Long reach with Magnetorque swing makes the difference ...it's the key to efficient operation"

... J. L. SIMMONS COMPANY INC., CONTRACTORS—NORTH SIDE SEWAGE TREATMENT WORKS OF GREATER CHICAGO

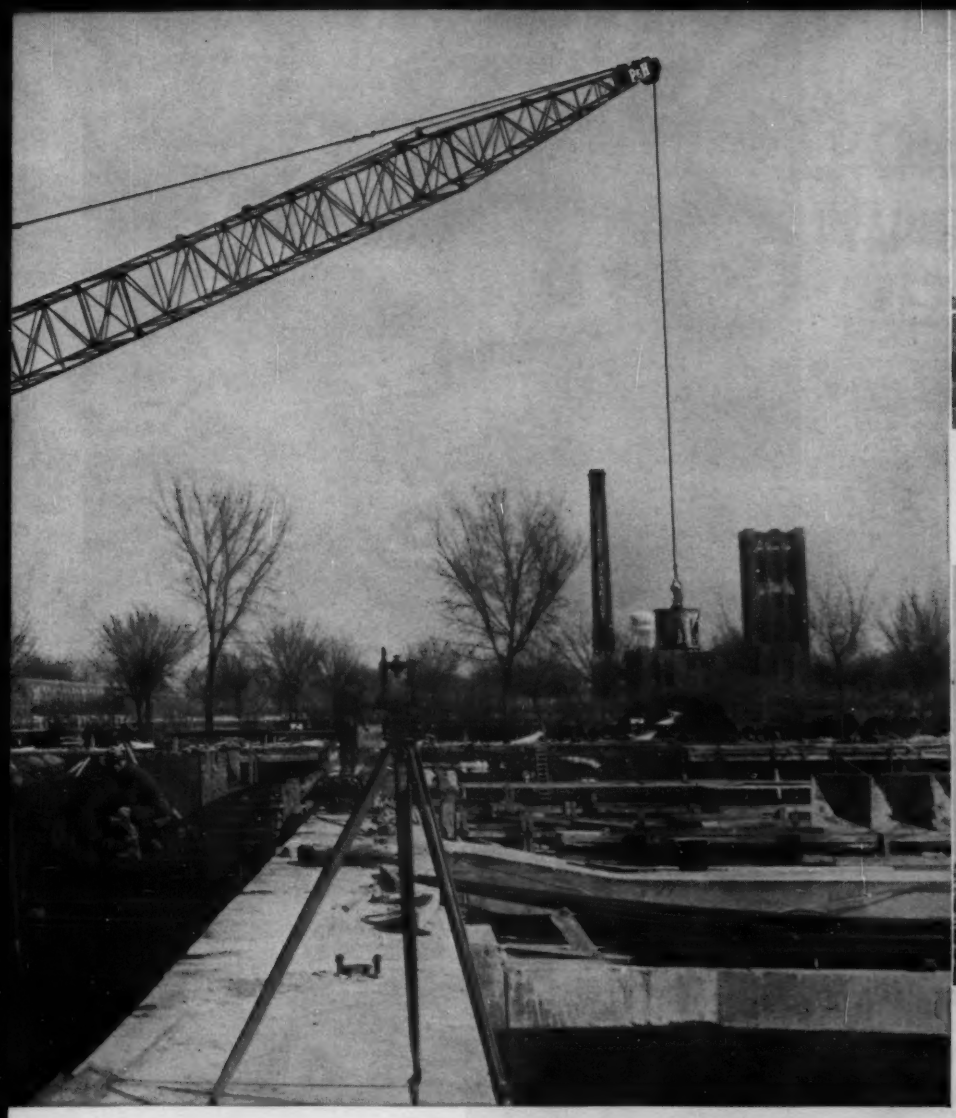
One of the nation's oldest contractors reports on his 110-ton P&H Crawler Crane operation.

Here's what F. A. Miller, Construction Manager has to say . . . *"Without a doubt, our 110-ton P&H Crane has been the key to this operation. Its lived up to our every expectation. For example—we've poured concrete over 170 feet away with a 200 foot boom and a 1-yard bucket . . . over 150 feet away with a 2-yard bucket. Its got the fastest, controlled swings of any crane I've seen. We're ahead of schedule and our work is proceeding smoothly, efficiently as planned . . . thanks to our P&H."*

Long Reach—the ability to handle up to 300 feet of boom permitted J. L. Simmons Company to work from the perimeter of the job and spot light loads anywhere . . . resulted in faster, more economical construction, more efficient operation.

Fast, Effortless Swings—with exclusive Magnetorque® drive. The big crane gave Simmons more work loads per hour and smoother, more accurate starting and stopping . . . Highly important in this operation where long, safe swings were a necessity.

Big Capacity—with a rating of 110 tons, the P&H had more than enough capacity to handle the big work loads of concrete and equipment at those far-



Long reach of the 110-ton P&H permitted efficient work procedure. Here the crane loads concrete bucket from mixer truck on job perimeter before delivery to work area.

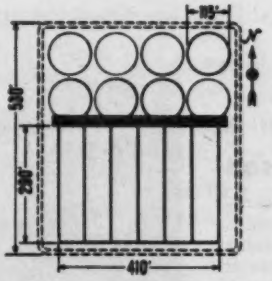
Precise spotting of work loads was a cinch due to P&H planetary boom hoist, unmatched stability and positive-action hydraulic controls.

out reaches . . . enabled Simmons to maintain top production and uninterrupted work flow.

Accurate Spotting of Loads—precise accuracy in spotting loads at far-out reaches was a problem on this job—and was solved through Independent Planetary Boom Hoist, which permitted power lowering of the boom, together with the simple Hydraulic Control System—where the slightest lever or pedal movement produced immediate response—resulted in smoother work cycles with no lost time jockeying for position.

Unmatched Stability—the ability to handle up to 300 feet of boom and the rated loads with utmost accuracy and safety were the result of P&H balanced design, even weight distribution and the extra wide 16′ 10″ crawler assembly. It was this built-in stability that permitted those long reaches with full capacity loads.

For the full detailed report on this unusual job story, write for Case History Report No. 102 . . . to the world's largest manufacturer of power cranes and shovels or contact your P&H Dealer.



● 8 circular, final settling tanks, each 115′ in diameter.

☐ Overhead gallery separates aeration and settling tanks.

☐ Adjoining aeration tanks form huge rectangle 290′ x 410′.

=== work path of P&H crawler crane

Overall job layout and type of unit construction indicates importance of perimeter work operation.

HARNISCHFEGER P&H
Milwaukee 46, Wisconsin

AS YOU PLAN AHEAD, PLAN ON MAGNETORQUE . . . AND CHOOSE THE RIGHT MACHINE FOR YOUR WORK FROM 40 DIFFERENT MODELS . . . THERE'S A P&H FOR EVERY JOB! . . . WRITE FOR "THE FABULOUS 40"

Circle 79 on Reader Service Card

Spliced Girders

Two 60-ton cranes—a crawler on the ground and a traveler mounted atop bridge steelwork—team up to hold halves of a girder that is being spliced by an American Bridge erection crew for Pittsburgh's 62nd St. Bridge. After splicing, four 72-ton girders span 180 ft across a warehouse near the Allegheny River.

Mired in Mud

Melting snow and rain make muddy going for pipe-laying crew at work on section of 1,400-mi Alberta-California natural gas line in southern Oregon. Joint contractors Western Pipeline, Inc. and J. P. Neill & Co. drain excess water from trench with a battery of pumps to permit placement of 36-in.-dia pipe sections on temporary timber cribbing.

Open-Box Caisson

Joint venture contractors Steers-Snare of New York are sinking a 129x229-ft caisson within a cellular cofferdam to seat the Staten Island tower of the Narrows Bridge. A barge-mounted plant with two 3-yd mixers feeds concrete via a skip-hoist to two Manitowoc cranes that are filling the 7-ft-deep steel cutting edge of the open-box caisson.

ECONOMY IN ACTION:

MORETRENCH WELLPOINTS

DEWATERING A STORM DRAINAGE PROJECT

Bordeaux Storm Drainage Project, Fayetteville, North Carolina
Contractor: Crowell Constructors, Inc., Fayetteville

Consider how top-notch pumping equipment effects savings:

1. Wellpoints on 5′ centers on one side of the trench only	Lower rental, installation and removal costs
2. One pump pumping on 80 wellpoints keeps trench bone dry	Lower operating and labor costs
3. Firm dry banks are sloped.	No sheeting needed

There's economy in *quality*. When you predrain with a Moretrench Wellpoint System, you're using the best pumping equipment made. Less units do the work. Your final cost reflects this saving. Think about this when you're figuring pumping costs and—get the best.

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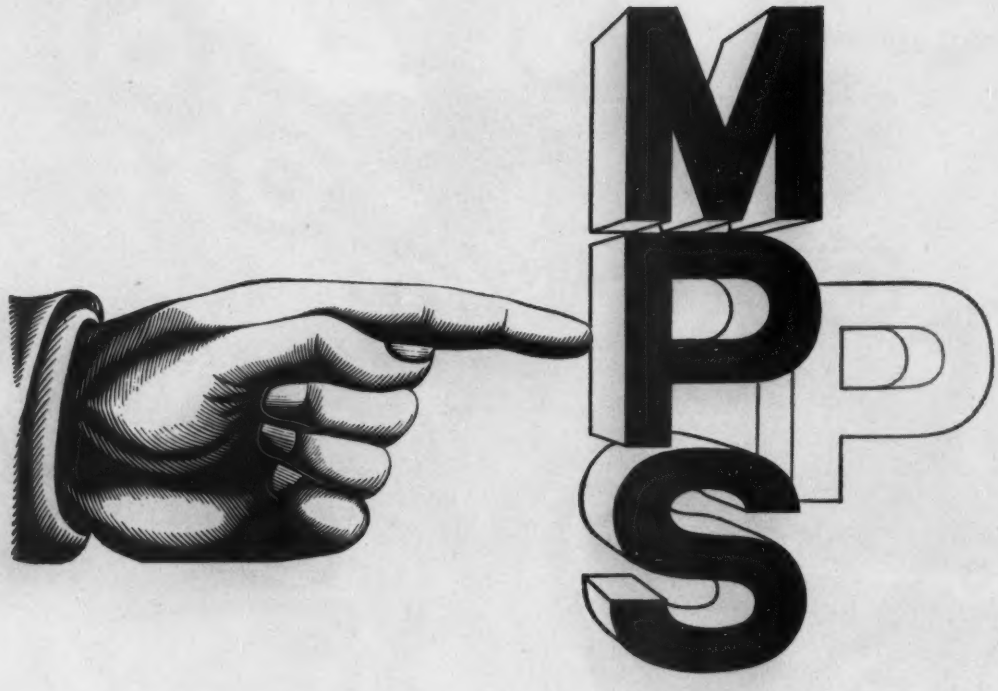

May we introduce you to a new advertising signature? You will be seeing it in many trade publications during the coming months, but more important, you will actually experience it in any dealings you have with us. It's more than the initials of our company name . . . it stands for a modern concept of real, integrated service to you, as our customers.

We suggest you find out from a Marion salesman or distributor what MPPS can mean to you and your pocketbook.

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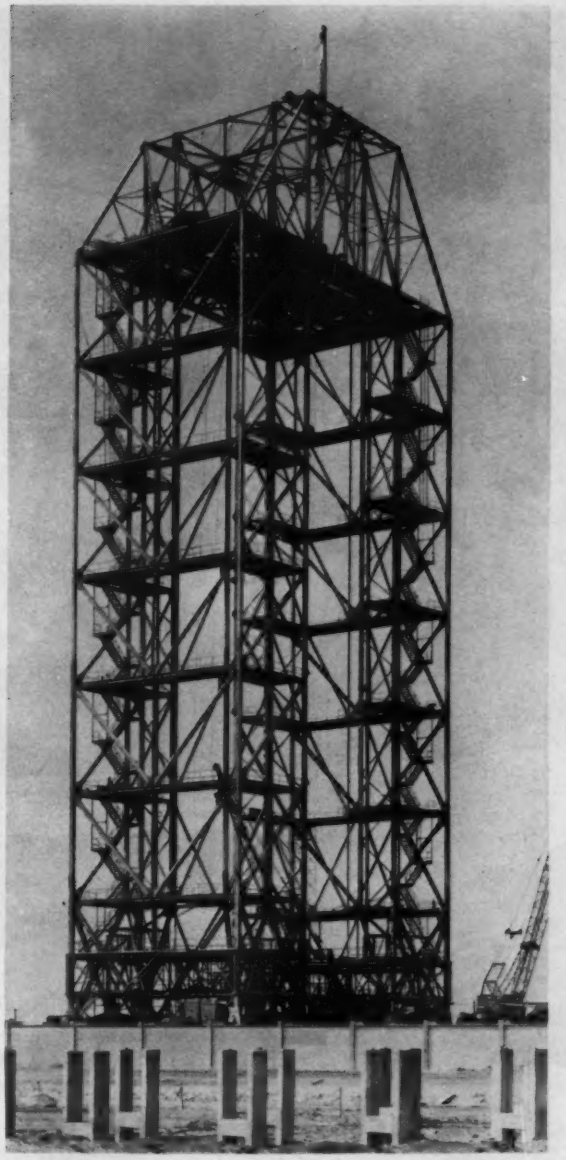
Circle 82 on Reader Service Card

continued from page 80

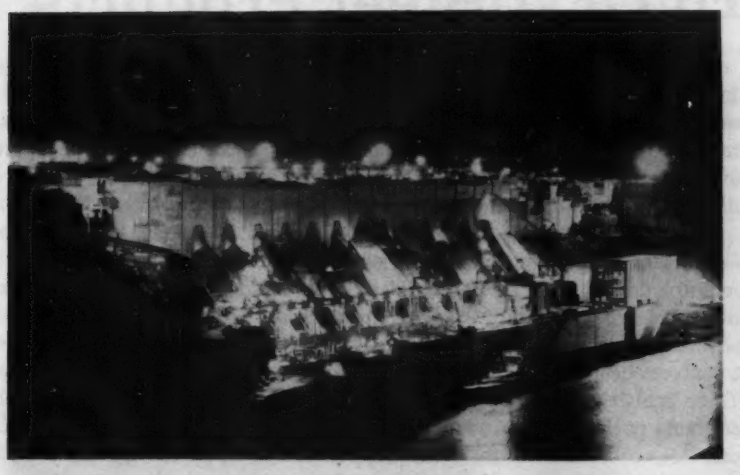
Mobile Tower

A Kaiser Steel Corp. crew recently topped out this 310-ft-high gantry tower that will service Saturn rockets at Cape Canaveral. The 2,800-ton structure moves on rails under its own power, riding four 12-wheel carriages. Four 100-hp electric motors power the rig. Hydraulically activated pins secure it to anchor rails when stationary.



Tied Arches

Crane with sling holding spreader beam erects one of seven tied arch trusses that span 97 ft to support the roof of a warehouse being built for the Pennsylvania Electric Co. at Johnstown, Pa. Five steel hangers at 16-ft centers hold each 18-in. H-beam tie below the 24-in. WF arch rib. Bethlehem Steel Co. is erecting 1,500 tons of steel here.



Spectacle at Niagara

Lights blaze in the night as Merritt, Chapman & Scott Corp. crews work round the clock to complete penstock encasements and generator housings of the Robert Moses Niagara Generating Plant. Schedule calls for putting six generators on line this year. Three American Revolver cranes ride rails atop steel trestle to place concrete.

Modern sports stadiums... modern CF&I Steel Products

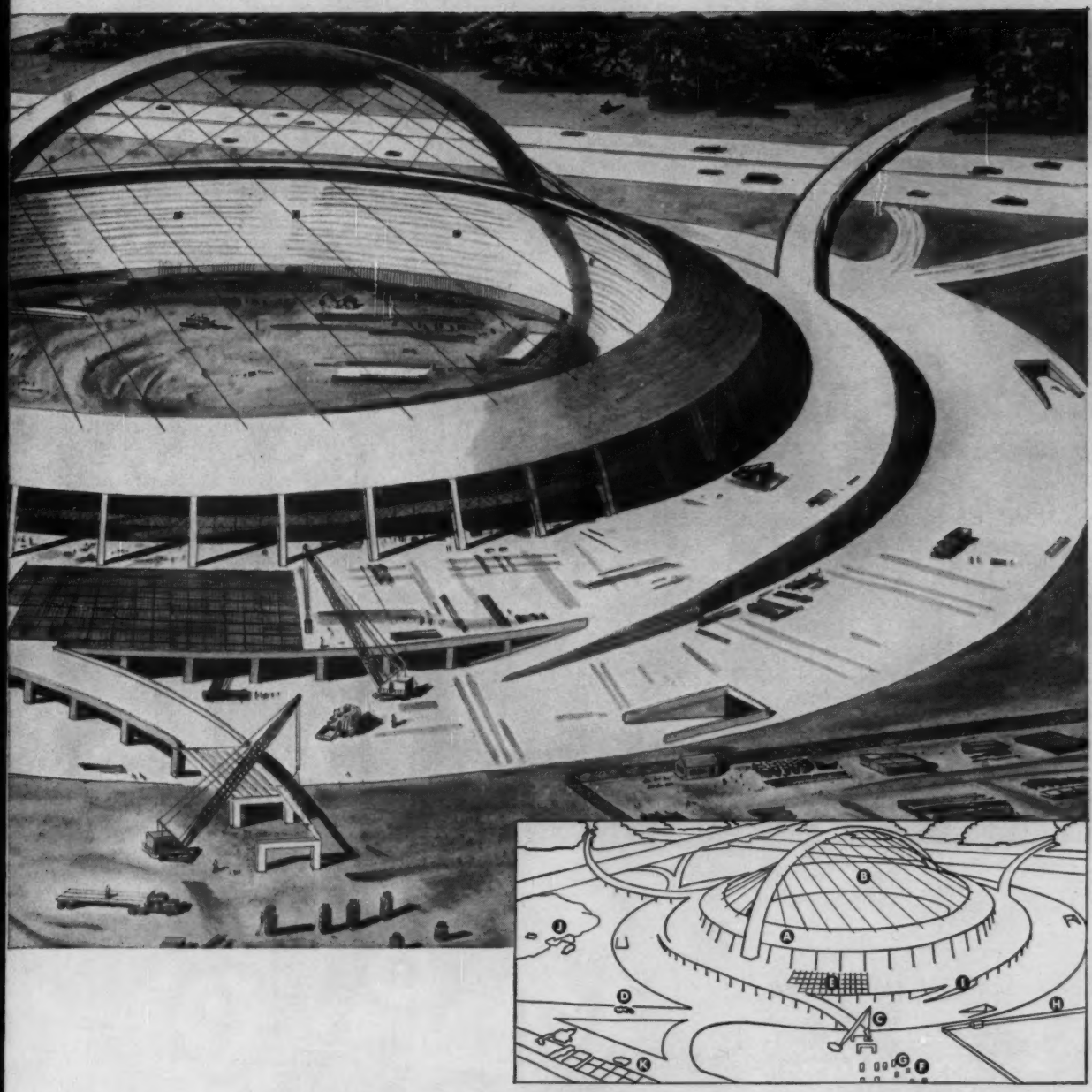
Tomorrow's sports arenas, many now on the drawing boards, will differ vastly from anything in existence today. Using new construction techniques and new construction products, contractors will erect a girderless stadium with an unobstructed view from any section — a stadium with a retractable roof that allows contests to be played in any kind of weather.

CF&I — a nationwide steel company — provides many different steel products for all types of construction, including sports stadiums like the one shown above.

CF&I Prestressed Concrete Strand and Wire **(A)** give the necessary tensile strength to precast concrete beams used in the grandstands of the stadium. These lightweight beams are also widely used in the underground parking area and the ramps leading to the stadium.

CF&I-Wickwire Wire Rope **(B)** could be used to support the transparent plastic roof which folds like an accordian at the arch. For more standard construction uses, CF&I's premium wire rope, Double Gray®-X, gives extra-long life because its wires are protected by a molecular shield of molybdenum disulphide. And *CF&I-Wickwire Wire Rope Slings* **(C)** are selected for safe, dependable hoisting.

CF&I Grader Blades and Cutting Edges **(D)** change hard, rocky ground into smooth roadbeds. *CF&I-Welded Wire Fabric* **(E)** provides steel reinforcement for concrete in main highways, access roads, parking areas and tilt-up constructions, giving them longer life and smoother surfaces. *CF&I Rebars* **(F)** strengthen the concrete columns which support the ramps leading to one of the



three-tier parking areas. And *CF&I Cal-Tie Wire* (G) in convenient belt-borne reels, permits safe, fast, economical tying of the rebars.

For maximum security of material and equipment stored outdoors, the contractors choose an easy-to-install *Realock Chain Link Fence* (H). It is widely used around parking fields and to control the stream of traffic from the parking areas to the stadium. In addition, Realock Fence is used to separate grandstand sections and is ideal for crowd control along overhead ramps and walkways.

Thousands of pounds of *CF&I Nails* (I) are used for wooden scaffolding and concrete forms, while much of the gravel and aggregate is sized on *CF&I Industrial Screens* (J). And *CF&I-Wickwire Automotive Springs* (K) are extensively used in trucks and service vehicles.

More and more contractors now realize that a domestic steel company—like CF&I—is best equipped to supply them with dependable steel products and expert on-the-job technical assistance. For complete details, contact a nearby CF&I office or write for Catalog G-104 "CF&I Steel Products for the Construction Industry."

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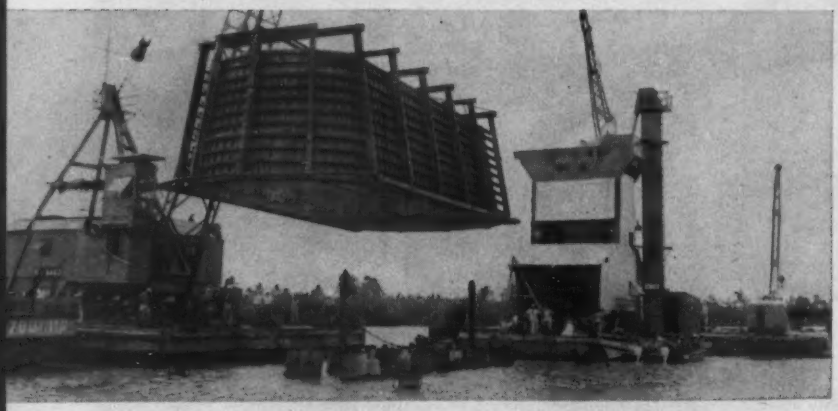
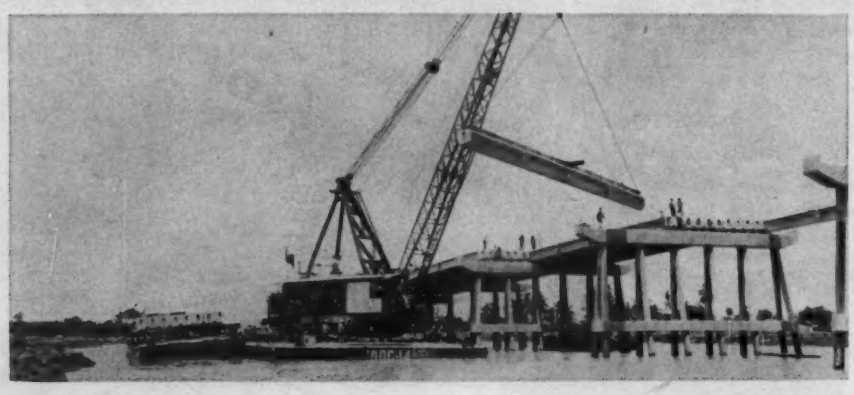
Construction 'Round the World...



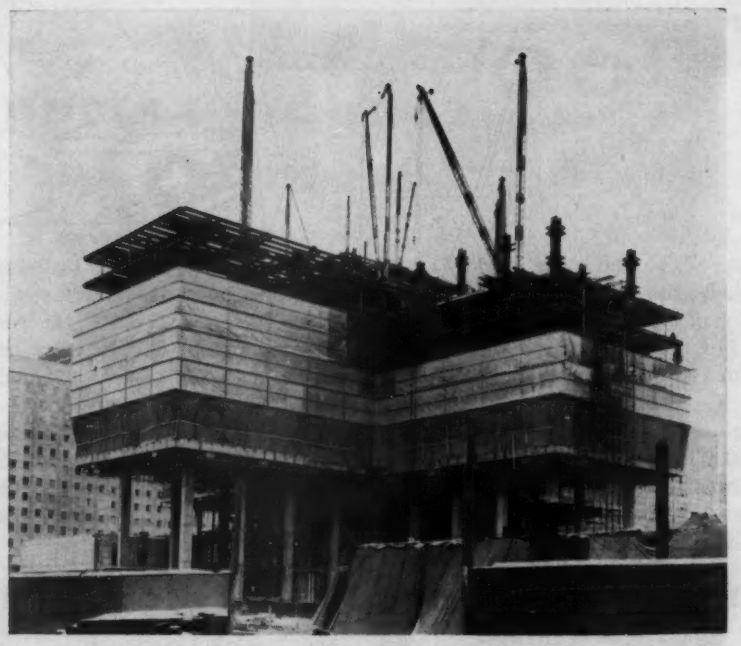
In Viet Nam

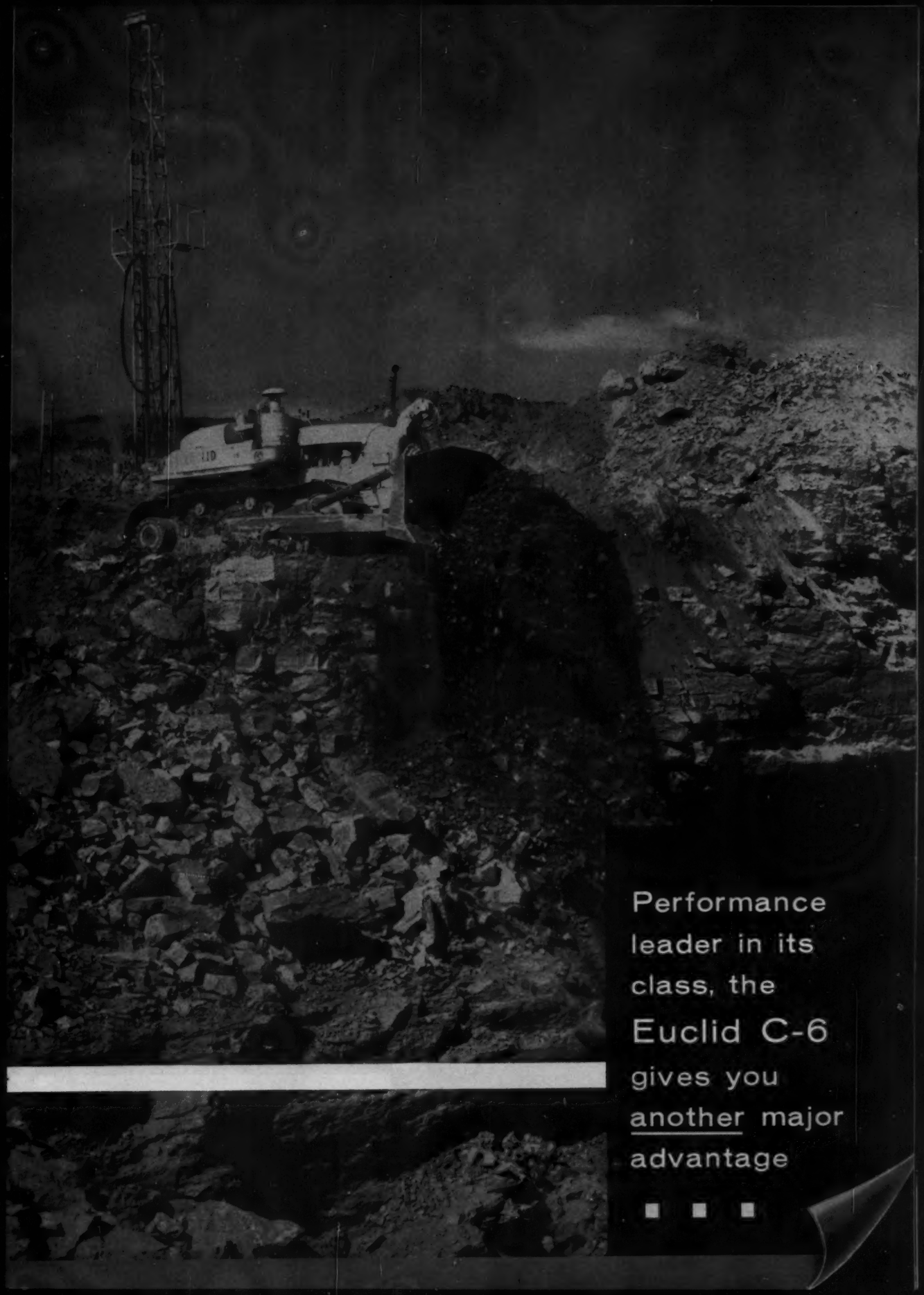
A barge-mounted crane (top) places preassembled form for main pier of the Saigon River Bridge, which is a link in one of three major highway projects being built in Viet Nam by Johnson, Drake & Piper, Inc. Main piers of the bridge are founded on clusters of 30-in. shell piles reinforced with core beams. Main spans of the 3,200-ft-long bridge are plate girders. The approach spans consist of 81-ft-long prestressed girders and pile bents. A 60-ton American R-30 crane (bottom) erects the 22-ton girders.



In Canada

A forest of guy derricks sprout from Place Ville-Marie office building in Montreal as a Dominion Structural Steel Co. crew pushes erection of the cross-shaped skyscraper in spite of cold winter weather. Sheets of polyethelene film enclose lower stories of the building and permit other trades to work in steam-heated comfort.





Performance leader in its class, the Euclid C-6 gives you another major advantage

■ ■ ■

Savings in engine costs alone make the "Euc" C-6 today's best tractor buy

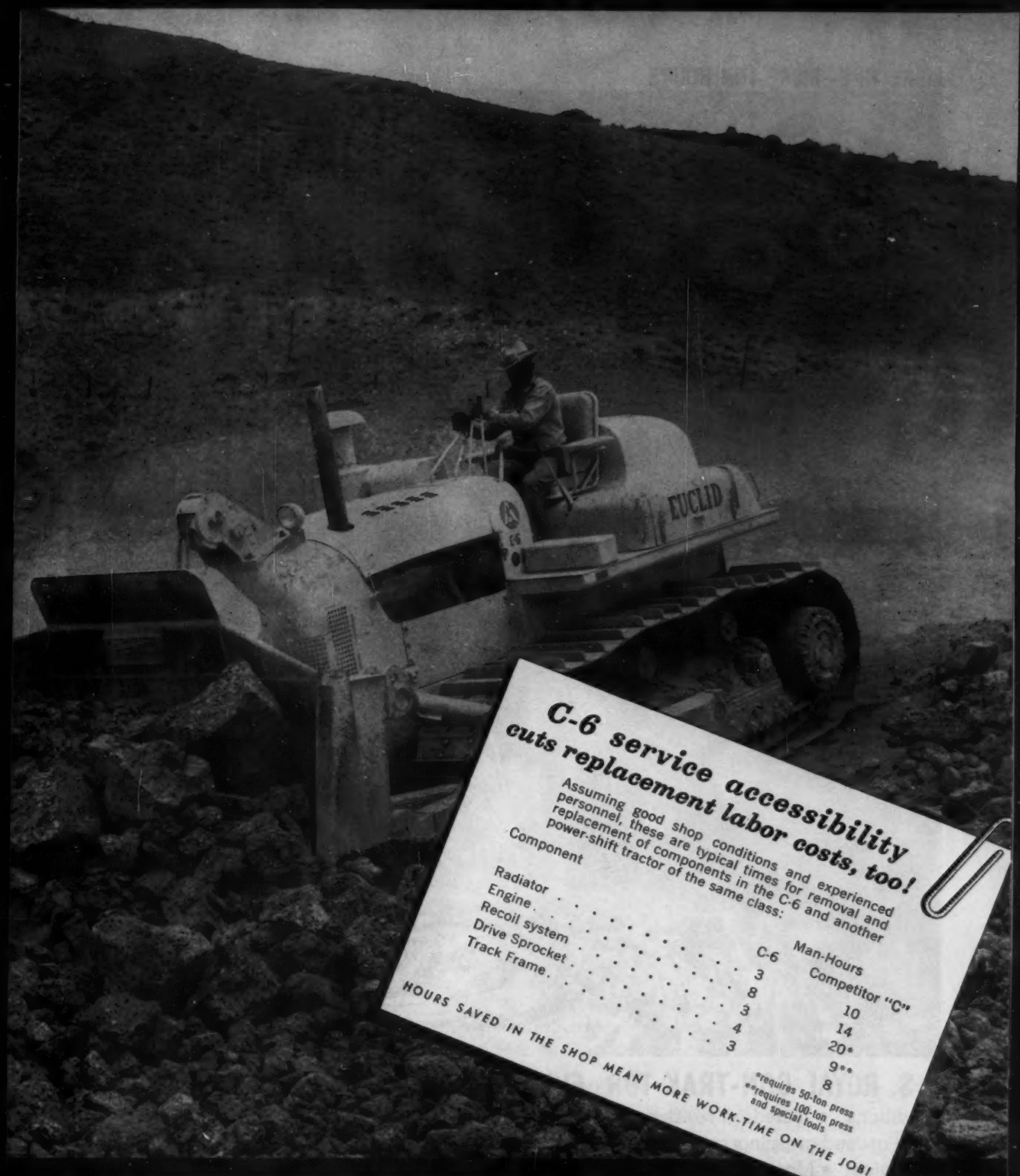
In the Euclid C-6 you get the advantages of job proved power train components... the reliability of the GM 6-71 engine, Allison Torqmatic Drive and Euclid's famous planetary drive... that help keep downtime to a minimum. You get designed-in service accessibility that's unsurpassed by any competitive crawler... servicing or complete removal and replacement time is well below that required for comparable tractors.

You get a big advantage, too, in the lower cost of engine replacement parts... savings that cut your maintenance expense to the absolute minimum. For example, pistons and rings for a competitive engine are 162% higher in cost than for the GM engine; a water pump 243% more; a block 270% more; and replacement of a complete engine, from fan to flywheel, costs almost twice as much in the competitive crawler. These savings, plus faster repair and replacement times, are some of the reasons why owners have found the "Euc" C-6 is the lowest cost tractor in the 200 h.p. class.

EUCLID Division of General Motors
Hudson, Ohio
Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland

Full-power shift . . . fast-as-a-fox maneuverability . . . and greater over-all work-ability!

Have your dealer give you all the facts and figures on the C-6 . . . you'll find that in production and maintenance cost this "Euc" gives you a better return on investment.



C-6 service accessibility cuts replacement labor costs, too!

Assuming good shop conditions and experienced personnel, these are typical times for removal and replacement of components in the C-6 and another power-shift tractor of the same class:

Component	Man-Hours C-6	Competitor "C"
Radiator	3	10
Engine	8	14
Recoil system	3	20*
Drive Sprocket	4	9**
Track Frame	3	8

*requires 50-ton press
**requires 100-ton press and special tools

HOURS SAVED IN THE SHOP MEAN MORE WORK-TIME ON THE JOB!

GM GENERAL MOTORS EUCLID

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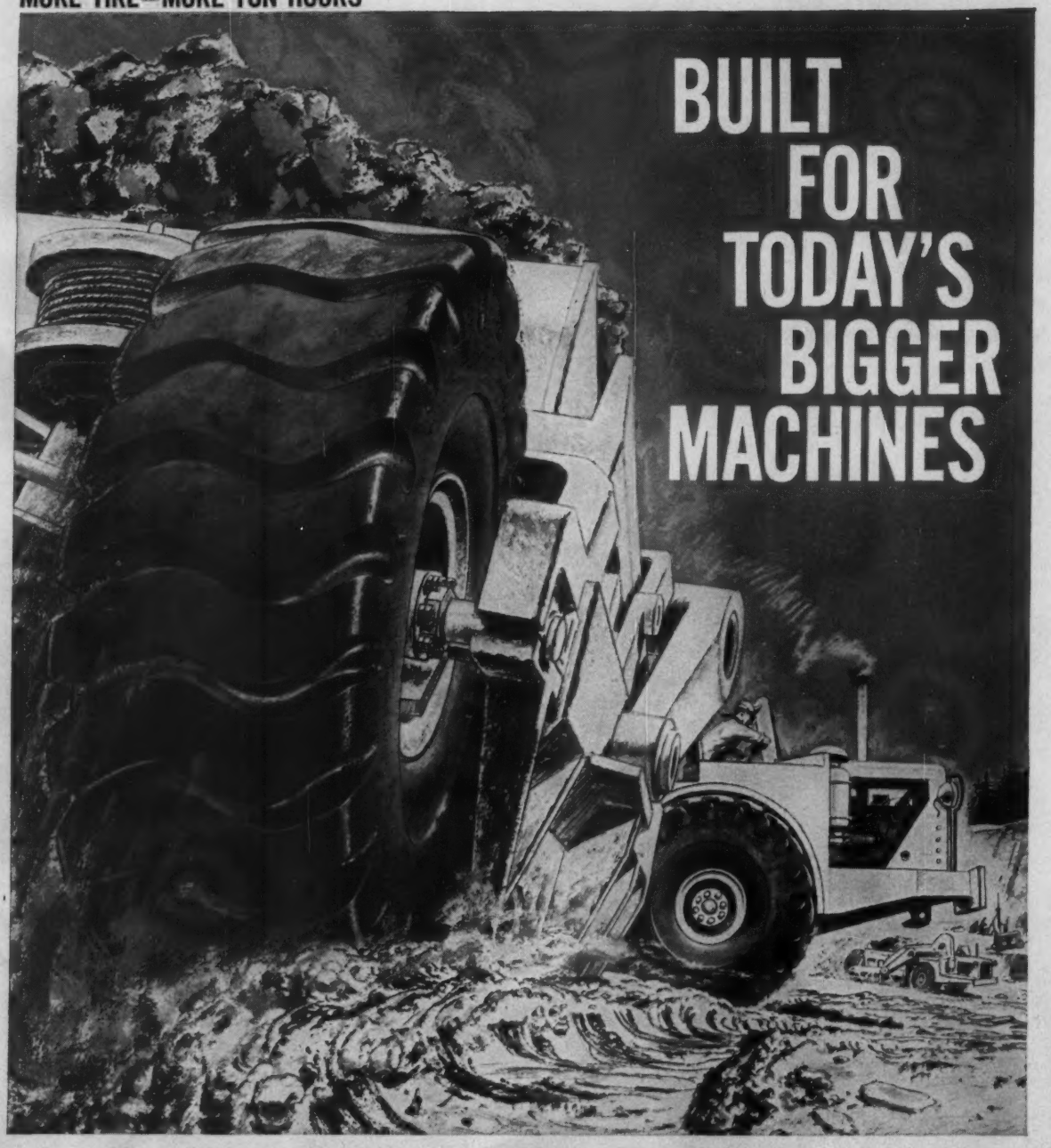
FOR MOVING EARTH, ROCK, COAL AND ORE

MORE TIRE—MORE TON HOURS



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Construction Methods AND EQUIPMENT

MARCH, 1961

VOLUME 43 • NUMBER 3

HENRY T. PEREZ, Editor

New Hope for Tax Reform

"AMONG THE REFORMS of the federal tax system which I expect to propose is a modification of the income tax laws to provide additional incentives for investment in plant and equipment." Thus spoke President Kennedy in a recent address to Congress on economic recovery and growth. His words are encouraging to the construction industry.

Increased investment in plant and equipment by business in general will, of course, benefit the contractor by increasing the volume of work available to him. And this, in turn, will benefit the material supplier and the construction worker, as well as the construction machinery manufacturer and dealer.

Obviously, any "additional incentives for investment in plant and equipment" will benefit the contractor in the conduct of his own business, too. For if they take the form of faster equipment depreciation write-offs, as seems likely, it will make it easier to modernize and expand present equipment fleets.

Making depreciation rules more realistic will help the contractor in many ways. Faster recapture of his original investment in his machines will conserve working capital for expansion, or for buying more-productive machines. Better machines enable him to compete more successfully. And by offering a customer a better price, he can help expand the total construction market.

Modernization of machinery depreciation rates is long overdue. Bulletin F, the Internal Revenue Service's table of useful lives of various types of equipment, was last revised in 1942. It is sadly out of date. In a survey conducted by *Construction Methods* among top contracting firms, 70% of the executives replying thought the useful lives specified by Bulletin F were too long.

But making the Bulletin F figures more realistic under today's tough operating conditions solves only one part of the problem. That revision might make it possible for the contractor to recover his original equipment cost in a reasonable time, but what about the higher price of the old machine's new replacement?

A glance at "Trends in the Machinery Market" (p. 39) will show that, to date, equipment prices have risen more than 77% above the 1947-49 average. And they've gone up about 2½% in the past year despite a buyer's market. So some provision should be included in the tax reform to help cover increased machinery costs.

Among the schemes proposed is one that bases depreciation on full replacement cost rather than on original cost. But this is unpalatable to the Treasury because it would be a form of tax forgiveness rather than a postponement of tax liability, as with other proposals.

A more practical version permits a "reinvestment depreciation allowance" reflecting the rise in replacement cost when an old asset is retired and replaced with a new one.

However, regardless of the form it takes, some sort of revision of the tax laws affecting investment in plant and equipment is urgently needed. It is needed right now by the construction industry and the country as a whole.

CABLE CONTROL—Machines have a tough time on the steep slopes. Cables from tractor-mounted winches are needed to keep pipelayers and pipe from sliding down the hills.

A pipeline contractor in northern Alabama knows that laying 34½ mi of prefabricated pipe is not an easy job. Steep grades, rock cuts, and stream crossings make excavation difficult because machines can't maneuver easily. To meet specifications, the ditch bottom must be finished carefully, often by hand, so that its final grade exactly matches the profile of the prefabricated pipe. When completed, the 60-in. line will carry water to the city of Birmingham.

Trench Must Be Custom-Fitted

EXACTING SPECS and rugged terrain have combined to make the job of custom-digging a trench for a prefabricated 60-in. pipeline a tough one.

Grades as steep as 123% along the right-of-way in northern Alabama make it extremely difficult to work with heavy equipment. Winches are needed to keep machines from sliding.

Sections of the large-diameter pipe were prefabricated to fit the surveyed profile. This means that the contractor must dig the ditch so that its finished grade exactly matches that of the shop-fabricated pipe. The ditch must be finished carefully because the specifications call for continuous contact between the pipe and the bottom of the ditch. Extensive hand finishing is necessary to meet this requirement.

Excessive water also is a problem. According to the specs, the ditch must be dry during pipe installation and backfilling. Five stream crossings along the right-of-way are especially troublesome because of this requirement. Gravel, sand bags, pumps, and even cofferdams are utilized to keep out water.

The 34½-mi-long pipeline will carry water to the city of Birmingham. General contractor for the $13-million project is Morrison-Knudsen Co. The J. W. Goodwin Engineering Co. of Birmingham handles design and engineering.

Excavation along the right-of-way, even where the ground is dry, is difficult because of the steep slopes. Two crawler-mounted backhoes handle the ditch digging. One is a P&H unit with a 3-yd Esco bucket, the other is a Koehring rig. Caterpillar tractors with winches help the backhoes up the steep grades and hold them in position during digging.

Because of the tough digging conditions, it is important to maintain the line of the ditch as accurately as possible to avoid excavating costly excess material. To help the backhoes stay on line, a two-man team checks the direction of the ditch from offset stakes set by surveyors. The men place a 2x2 on the surveyed line from which they measure the distance to the centerline of the ditch. About every 5 ft they place stones to mark the line. The backhoe operator digs the ditch by following the line of stones.

Rock is present in many locations, and blasting is necessary.

TOUGH DIGGING—A P&H backhoe with 3-yd bucket inches up a 70% grade while tractor and surveying crew keep it on line.

WATER PROBLEM—Crew finishes ditch bottom by placing sand bags on top of a layer of stone to keep ditch dry during pipelaying.

To 60-Inch Prefabricated Line

Caterpillar Traxcavators in the ditch move the shot rock to within reach of clamshells that remove it.

Finishing the ditch bottom is an easy job in dry areas. Laborers stretch a line between stakes in the bottom of the ditch and smooth out the dirt to the proper grade. Where rock is present, the ditch is excavated slightly below grade and backfilled with soft material to make finishing easier and to provide continuous support for the pipe.

Wet spots are a headache; the ditch bottom must be excavated well below grade and backfilled with a layer of stone. A layer of sand bags is placed on top of the stone to insure proper contact between the pipe and the ditch bottom.

Pumps frequently are used to remove excess water during pipelaying and backfilling. Two of the stream crossings were made by building cofferdams and diverting the streams.

One section of the pipeline crosses an open-pit coal mining area, and the wasted material is difficult to excavate. Coal washings that have accumulated in the low areas are especially rough on the dewatering equipment. Pumps must work overtime to remove water seeping in through the pervious coal waste. The material quickly clogs the pumps and causes considerable downtime.

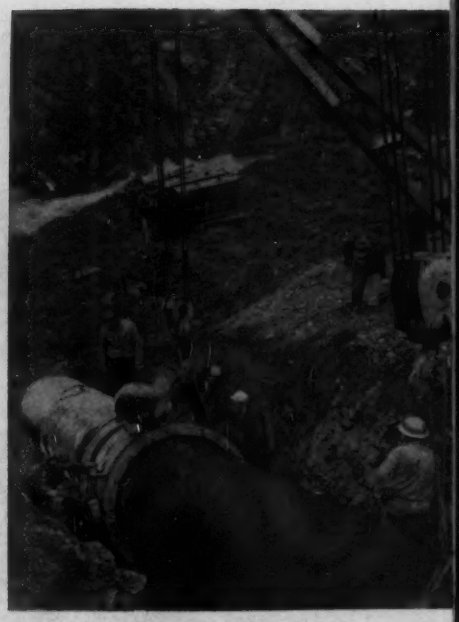
At one of the stream crossings, Morrison-Knudsen had so much trouble with the coal waste that they had to stabilize the soil by dumping gravel into the excavation to provide a solid base. This turned out to be an expensive operation because gravel had to be brought in from Birmingham, about 25 mi away, where it costs $6 per yd. It took a total of 1,200 yd of gravel to complete the stream crossing.

Preassembly Speeds Pipelaying

In the shop the pipe is fabricated and assembled into 40-ft-long sections, or joints. Each section weighs 14,000 to 20,000 lb and is shipped to the field in one piece.

In the field several joints are preassembled into longer sections before the pipe is lowered into the ditch. This procedure speeds up welding, cuts down on the amount of excavation, and simplifies backfilling.

Welding is faster while the pipe is on the ground because the



PIPELAYING—Three side-boom rigs hold a 120-ft-long, 120,000-lb section of pipe in exact position on a steep slope so welders can complete a joint. The men work in bell holes that have been dug at each joint to give the welders plenty of elbow room and to permit access to the bottom of the pipe.

CUSTOM-FITTED TRENCH . . . ***continued***

pipe is easier to handle and the welders have more elbow room. Also, adjoining sections of pipe often can be turned to avoid overhead welding.

Preassembling pipe sections also reduces excavation. In-place welding requires a bell hole at every weld to provide working room for the men and to give access to the bottom of the pipe. Such extra excavation is costly on the steep slopes along the right-of-way.

Backfilling is easier where preassembled pipe is placed because the men don't have to worry about compacting dirt under the pipe in the bell holes. Also, the fewer bell holes there are along the line, the less backfill material it takes to fill the ditch.

Length of the preassembled pipe sections varies from three to five joints, depending upon the terrain. In flat ground the pipe is straight and easy to handle, and Morrison-Knudsen has been able to place several sections that were 200 ft long. On the steeper grades 160-ft-long sections are the limit.

Crawler tractors with side booms handle the pipelaying. The contractor operates a fleet of Caterpillar pipelayers as well as three International Harvester units that were bought from a subcontractor.

On steep grades a crawler tractor with a winch is needed for each unit handling the pipe. The winches help the pipelayers up and down the slopes and keep the rigs from sliding down the hills.

Another tractor with a winch is needed to hold the pipe in place. The cable is tied to the end of a pipe section, and the winch helps position the pipe and holds it in place during welding.

Conveyor Backfills Ditch

Backfill material is placed in 8-in.-deep lifts and tamped after each lift. Excavated material, where suitable, is used for backfilling, and scrapers bring in dirt from other areas for rock cuts and muddy sections.

To help place the fill, Morrison-Knudsen built a special belt conveyor that rides along the edge of the ditch and discharges the dirt just above the pipe. The rig is mounted on a crawler undercarriage that was salvaged from an old trencher.

The conveyor reaches 21 ft and has a 48-in.-wide belt. It tilts in two directions. The discharge end can be moved up and down, and the conveyor frame can be tilted to keep it horizontal regardless of the angle of the undercarriage. Hoppers, located above the belt and charged by tractor shovels, feed the conveyor.

Power for the belt comes from a 300-w Caterpillar electric plant. An electric motor drives the head pulley through V-belts. The conveyor belt speed is 90 fpm. The rig is not self-propelled and must be towed along the ditch by a tractor.

In confined areas and other trouble spots this high-production rig cannot work easily, and the backfilling operation is handled by a crane with a clamshell bucket. In these areas, either a tractor shovel or scrapers moves the dirt to within reach of the clamshell.

BACKFILLING—Cat Traxcavator feeds dirt to a clamshell which backfills the ditch.

TAMPING—Each lift of backfill is compacted with Ingersoll-Rand hand tampers.

After machines have placed the backfill material, crews in the ditch distribute it along the pipe and compact it with Ingersoll-Rand hand-held tampers. One compressor, usually a 600-cfm I-R Gyro-Flo, supplies air to several tampers.

Special precautions are necessary where grades are steep to prevent rainwater from washing out the backfill. Morrison-Knudsen is using sand bags filled with a lean mixture of dry concrete instead of sand to build wall-like structures, or dams, across the ditch where the grades are steep.

Truck mixers haul concrete to the job site where crews fill the bags and load them into a clamshell bucket. A crane delivers the bags to the ditch. Sections between these transverse concrete walls are backfilled and tamped in the normal manner.

Contractor Works as Engineer

Occasionally, the planned grade of the pipe must be changed because the original ground profile has been altered by land clearing. Minimum cover for the pipe is 3 ft, requiring an 8-ft-deep trench. The original design, based on preliminary surveys, maintained this depth along most of the line. But work along the right-of-way changed the profile, and the depth of the pipe now varies from 8 to 15 ft.

In some sections, maintaining the original grade would have required a ditch 28 ft deep, while in others it would have exposed the pipe. These areas were redesigned to get enough cover in the shallow spots and to cut down on the excavation in the deep ones.

Redesigning the pipe is the contractor's job. Morrison-Knudsen engineers handle the design work in the field office and work crews change the pipe at the job site.

This sometimes poses a problem. Changing the grade also changes the length of the pipe runs so that pieces of pipe have to be cut off or added to fit the revised plans.

Changing the mitered joints is an especially ticklish job. Also, the rebuilt sections of pipe must be coated. This is an extra operation at the site because the prefabricated pipe is delivered to the field already coated.

In spite of the terrain and the demanding specifications Morrison-Knudsen has placed as much as 3,200 ft of pipe in one day. Scheduling plays an important part in maintaining a high rate of production and in keeping all crews busy.

Operations usually proceed in two stages. First the men and machines complete the pipeline in the straight runs and open areas. Highway and stream crossings, extremely steep slopes, and other troublesome spots are left open to be completed later.

These areas generally involve short runs of pipe that can be handled by small crews. Morrison-Knudsen assigns one crew to put the finishing touches to the ditch in one area, while in another spot a different crew is pumping out water and placing stones and sand bags. In a third area, pipe is being placed in the ditch and another crew is backfilling the ditch at another spot. This type of operation makes efficient use of time and labor regardless of the terrain or obstacles along the way.

Who's Who on the Job

Morrison-Knudsen's staff includes Bill Chapman, project engineer, and Nick Brocco, project manager. General superintendent is Jack Collins. General manager and engineer for the Birmingham Industrial Water Board is George Wall.

FAST BACKFILLER—Morrison-Knudsen built a special conveyor for backfilling. A Cat electric set powers the machine; its electric motor drives the 48-in. belt at 90 fpm.

Four Reasons Why This Concrete Plant Is Outstanding

The Plant's Nerve Center

Push buttons control electronic and electric systems that actuate air-operated controls thrpughout the plant. A TV system watches critical plant areas the operator can't see.

Automatic

Consistently accurate concrete mixes are assured from a plant that is equipped with automatic control systems for easy operation. Equipment modifications and innovations in different parts of the plant simplify the work of the operator as well as the truck drivers.

Operator's Electronic Eye

One TV camera at the drum enables the operator to check slump during mixing. Another camera provides a check on the truck loading stations so concrete won't be discharged on the ground.

New Idea for Storage Area

Ground level storage bins are equipped with lids to keep out water and prevent freezing. Steel counterweights are hung on cables to balance the lids for easy opening and closing.

Easy-to-Clean Waste Pit

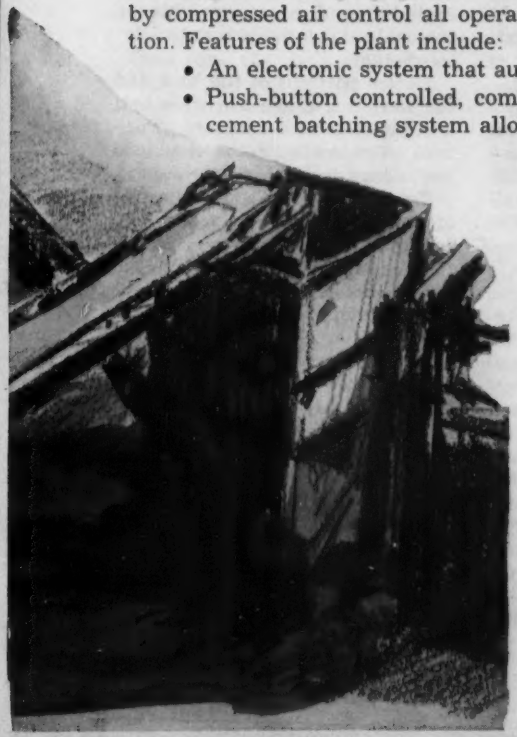
Pipes are placed radially in the pit when it is empty. When full, a few sticks of dynamite are dropped down the pipes, and a small blast shatters the waste so it can be removed easily.

Plant Produces Quality Concrete

A CONCRETE PLANT that features specially designed automatic controls and a number of unique component modifications is taking the guesswork out of production for C. W. Blakeslee & Sons, Inc., a New Haven, Conn., contractor.

The plant produces either dry-batch or central-mix concrete, and it can turn out both types at the same time. The automated plant is the answer to Blakeslee's search for a facility that will produce consistently accurate mixes according to standard formulas. Many of its automatically controlled components are designed to reduce or eliminate those errors that sometimes occur when operators must make adjustments to compensate for differences in the type and quality of materials.

One operator initiates all functions from a control room built into the structure that supports the batching and mixing equipment. Electric and electronic systems actuated by push buttons and operated by compressed air control all operations. Many controls were designed specifically for this installation. Features of the plant include:



- An electronic system that automatically compensates for moisture in sand.
- Push-button controlled, completely automatic cement and aggregate batching systems. The cement batching system allows two cements to be blended accurately in the same mix; the aggregate batching system can handle from one to eight different materials.
- A specially designed bin level indicator that Blakeslee says is superior to standard diaphragm-type indicators.
- A closed-circuit television system that watches critical plant functions that are outside of the operator's view. The operator also has an intercom system that keeps him in touch with the truck dispatcher and the ground storage area.
- A waste disposal pit that trucks use at the end of the day. When the pit is filled with waste, dynamite is dropped into pipes that were positioned when the pit was empty. A small blast shatters the waste so that it can be excavated easily.

continued on next page

Computer Controls Water

A good example of the advanced design of Blakeslee's plant is the electronic system that automatically compensates for moisture in the sand. All the operator does is select the proper dry weight of sand for a mix. Within seconds, the system automatically accomplishes the following:

1. A probe in the sand hopper measures the electrical resistance of the sand. This resistance indicates the amount of moisture in the sand and it can be measured with electrical instruments.

2. A computer translates the resistance measurement into a ratio. The amount of water is expressed as a percentage of the weight of sand.

3. Based on this percentage, the system weighs out enough additional sand to bring its dry weight up to standard formula specifications.

4. From the percentage of moisture and the amount of sand weighed out, the system computes the actual weight of water that was delivered as part of the sand.

5. Then a weight on the beam of the water scale is automatically adjusted to compensate for the weight of moisture in the sand. This weight is deducted from the total amount of water required by the dry weight formula.

The weighing operations can be performed either automatically or they can be controlled manually by an operator.

When the sand is weighed out, two indicators on a scale dial move to the weight of sand required by the dry weight formula. One indicator remains at this point, while the other moves ahead slightly to indicate the amount of additional sand that was added automatically to compensate for moisture. This difference is the amount of the water that will be deducted automatically from the formula weight of water.

No further correction for moisture takes places when additional aggregates are weighed out. The dry weight indicator shows the weight of aggregates that are added. The other indicator also moves when aggregates are added, but the weight it shows is the total of the dry weights of the materials and the water that was added as moisture in the sand.

Computers and automatic controls eliminate the need for making manual adjustments to compensate for differences in materials. When the sand and aggregate gates are opened the automatic sequencing system accomplishs all compensating functions.

To insure accurate measurement of the moisture, the probe is located in that portion of the bin from which the sand will be weighed out for the batch. A vibrator above the probe uniformly compacts the sand around it before each reading is taken.

Water for the mix is measured in a weigh batcher and held there until the operator releases it. By pushing a button, he selects either cold or hot water for the central plant or for truck tanks when dry batching.

Other equipment at the batcher also includes many innovations. The cement batching system is push-button controlled and completely automatic. Two cements can be blended into one batch. Similar controls operate the aggregate batching system, which can handle from one to eight materials. Admixtures also are selected and controlled by automatic pushbutton systems.

After weighing, aggregates can be dumped into a mixing drum or they can be transfered to a holding hopper from which they are later discharged into truck mixers. If the holding hopper is used, the operator can batch the next load immediately.

Central mixing and dry batching can take place simultaneously. When discharging into a truck mixer, the operation is timed to insure a good ribbon mix that minimizes cement dust. When central mixing, an automatic system adds the water at the proper time.

Piles Protect Bin Area

From the ground storage bins to the truck loading stations, the plant features many other new ideas.

In the ground storage area, an earth ramp leads to the top of the bins, which are charged by dump trucks and a conveyor. The ramp is held in place by cribbing made from discarded pieces of prestressed concrete piles that are braced with leftover sections of steel pile shells.

One pile shell runs along the tops of the bins and acts as a stop for trucks. It takes the guesswork out of backing up and simplifies truck-spotting. And the material is distributed more evenly because the load is dumped in the center of the bin. This arrangement also protects the concrete edges of the bins.

Innovations Improve Operation, Provide Safety In Storage Area

All bins are equipped with lids to keep out water and to prevent materials from freezing. A cable running over a pulley operates each lid, and counterweights on the cables keep the lids at the desired angle.

Lower portions of the bins and the feed end of the conveyor belt are enclosed in a concrete structure. The walls of the structure are as high as the tops of the bins.

Two oil heaters above the end of the conveyor belt provide heat for drying aggregates. Because the heaters are located above the belt, Blakeslee installed safety equipment to protect it in the event of a heater malfunction. Each heater is equipped with a low-temperature safety valve on its fuel supply line. In case of a fire, the valve would dump fuel into a trough that would take it out of the structure through a pipe in the wall, and fusible links would actuate fire extinguishers.

From the storage bins, aggregates are conveyed to the batcher. Because the plant is designed for one-operator control, materials

Jaws Improve Flow of Sand

The plant's maintenance man designed jaws that are welded to the clam-type gates on the sand bins. Opening the gates closes the jaws, breaking up lumps of sand that often obstruct flow.

Trough Protects Conveyor

Heaters above conveyor belt are equipped with safety valves on fuel lines. In case of fire, fuel would be dumped into a trough and carried out of the building through a hole in the wall.

Piles Serve as Cribbing

The truck ramp leading up to the storage bins is held in place by cribbing made of cut-off sections of prestressed concrete piles braced with leftover lengths of steel pile shells.

must flow out of the bins whenever the gates open. The plant's maintenance man, Walter Kupjanski, came up with a gadget that does just that. It resembles a pair of jaws and is attached to the inside of the clam-type hopper gates. When the gates are closed the jaws are open; opening the gates causes the jaws to close. The crushing action of the jaws breaks up lumps and permits sand to flow freely. In addition, the sand bins are vibrated automatically when the gates are opened.

Once on the belt, materials travel to the top of the batcher and are dumped into service bins. The 30-in.-wide, 450-ft-long belt is mounted on prestressed T-beams that cross a highway. The clear span is 117 ft. Idlers are suspended on wire rope to cushion the belt and decrease wear.

Pile shells again come in handy in the conveyor structure. Instead of using structural steel for the supports, Blakeslee used sets of four steel pile shells braced with structural shapes. Three such sets carry the T-beam and the conveyor.

At the top of the batcher, 92 ft above ground, the conveyor dumps the materials into any one of eight bins. Each is equipped with baffles to reduce abrasion. An electrically operated rotary distributor directs materials into the proper service bin.

Aggregates from the six ground storage bins can be selected either by the plant operator or by a man stationed in a control booth at the ground storage location.

New Bin Level Indicators

When the plant was first erected, the bins were equipped with diaphragm-type bin level indicators. But these were not adequate because they had to be replaced frequently. To reduce downtime, Blakeslee called in automation experts to design a simple, dependable bin level indicator.

Nordgren Assoc. of Berlin, Conn., and Connecticut Research Associates, Inc., of Danbury, came up with a control unit that consists of a short cylinder and a pendulum, both made of steel. The cylinder contains electrical switches and circuits and a universal coupling to which the arm of the pendulum is attached. Moisture cannot damage the components because a rubber sleeve around the pendulum arm covers the opening at the end of the cylinder. The universal coupling is made of a chrome alloy.

Operation of the indicator is simple. As the material level in a bin rises, the pendulum is swung laterally. When displacement reaches 6 deg in any direction, the pendulum trips a switch in the cylinder, closing the gates of the ground storage bin. The flow of aggregate is stopped before the service bin is completely full to accommodate material that is on the belt when the gates are closed.

Scale Checks Cement Flow

During batching, materials are discharged from the weigh bins into an 8-yd holding hopper. This works fine except in the case of cement, which occasionally tends to arch above the hopper gates and blocks the flow. When this occurs, prolonged vibration is necessary.

The operator cannot see the cement level in the bin, but he must be sure that all of it has been dumped out. To help the operator and to avoid unnecessary vibration, the holding hopper was mounted on a scale with its 3,000-lb dial within sight of the operator. The scale reading must be zero after the cement is dumped, indicating that the hopper is empty. Also, reference to two separate scale dials gives the operator a check on scale accuracy.

Operator Watches TV

A closed circuit television system keeps watch on other critical locations that the operator cannot see from the control room. The receiver is located just above the control board. One camera is in front of the mixing drum and is protected by an air-actuated door. When the door is open, the operator can observe the concrete in-

T-Beam Carries Conveyor

A single prestressed T-beam, including a 117-ft clear span across a highway, carries the 450-ft-long conveyor. The supports are made of steel pile shells.

Pile Shell Stops Trucks

There's no guesswork in spotting trucks at the storage bins. The driver backs up until the wheels hit a pile shell that runs along the tops of the bins.

Charging Trucks Is Easy

All the driver does is spot the truck and fill the water tank; the plant operator does the rest. Ready-mix concrete is delivered at left, dry batch at right.

side the drum and visually check the slump during mixing.

Another camera is aimed at the truck loading stations. It is mounted on a rotating tripod and by pushing a button can be aimed at either the dry-batch or the central-mix discharge chute. The operator can see when a truck is properly spotted before discharging the mix.

When charging a truck, all the driver does is connect the water hose to the truck's tank. The driver fills the tank by pushing a button. The charging chute is lowered to the truck mixer hydraulically. On the floor of the charging stations are concrete ramps that raise the truck's rear end about 10 in. for faster loading.

The dispatcher's office is next to the charging station. An intercom system keeps the operator in touch with the dispatcher. The system also maintains contact between the operator and the ground storage area and a technician-salesman's office.

Plant Accessories

Other unusual plant accessories include such items as a waste disposal pit, a ventilating and dust-excluding system, security lighting system, compressed air system, and boilers.

The waste disposal pit is near the batcher. Installations at the pit include a water supply line with taps and hoses, and truck stops made of pieces of concrete piles. Trucks are backed up to the stops for cleaning, and all washout is dumped into the pit. Cleaning water from the batcher areas also is carried to the pit by a concrete drain.

When the pit is empty, several pipes are placed in it radially with their ends extending above ground level at the edges of the pit. The pipes are plugged until the pit is full. Then, the plugs are removed and a few sticks of dynamite are dropped into each pipe. A small blast shatters the hardened waste so that it can be excavated and trucked away.

A ventilating and dust-excluding system is another useful plant accessory. The system goes into operation automatically when the operator presses a button to batch aggregate. It shuts off automatically when the material has been batched. This conserves warm air in the building during cold weather.

Heat conservation is also the reason for enclosing the entire batcher structure. Insulation board at the aggregate bins is installed so that a 2-in. gap between the insulation and the bins permits air to circulate to keep the bins warm.

Dual Purpose Lighting System

Lights in various areas of the plant provide illumination for night work and act as a security lighting system when the plant is shut down. Each of the system's eight lights stays on for only a few moments at a time. The sequence of the lighting pattern changes automatically to produce more than 4,000 different combinations. The timing can be changed daily.

Most controls in the plant are electrically actuated and air operated. A single compressor supplies air for the controls and for cement areation in the silos. The compressor is equipped with an aftercooler and unloading traps to reduce moisture in the air.

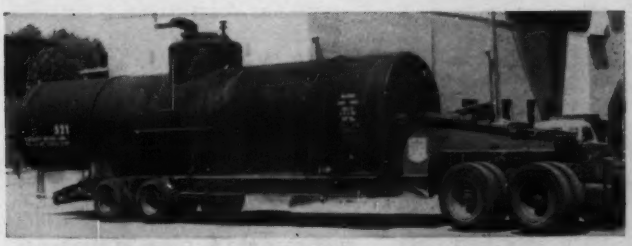
Two boilers supply steam for an asphalt plant, prestress plants, the heating system in the concrete plant, and the hot water supply. Both automatically controlled boilers are equipped with continuous chemical feed and continuous blowdown. Water is supplied either by the city or from private wells.

Only three men are required to operate all of the plant's equipment and accessories. One man has complete control of all functions at all times; the dispatcher handles the orders; and a maintenance man takes care of day-to-day chores required to keep the plant functioning properly.

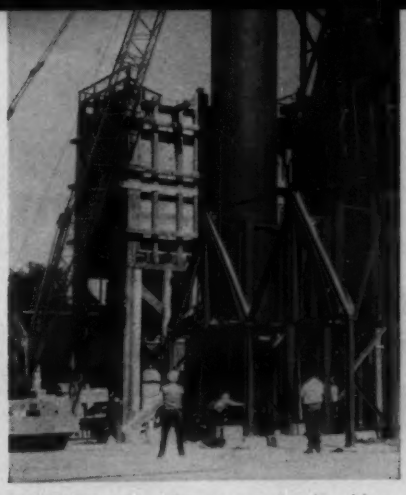
The plant's capacity is about 160 yd per hr. Central mixing capacity is somewhat limited by the 3-yd mixing drum, which was purchased in 1953 and taken from an old plant. Provision has been made in the new plant for installation of a bigger drum that will boost the plant's capacity.

The basic batching equipment was supplied by Erie Strayer. Most components were modified extensively to fit the plant. With the present equipment the plant is supplying concrete for Blakeslee's prestress and construction operations.

Discarded Tank Cars Become Storage Bins



ON THE ROAD—Trailer truck hauls an old tank to the job site where it is cleaned and converted to storage bin for materials.



ERECTION—Crane lifts converted tank and bracing as a unit into place on top of steel supports.

RAILROAD TANK CARS salvaged from the scrap heap now are serving as sand and gravel bins for an ingenious building materials supplier.

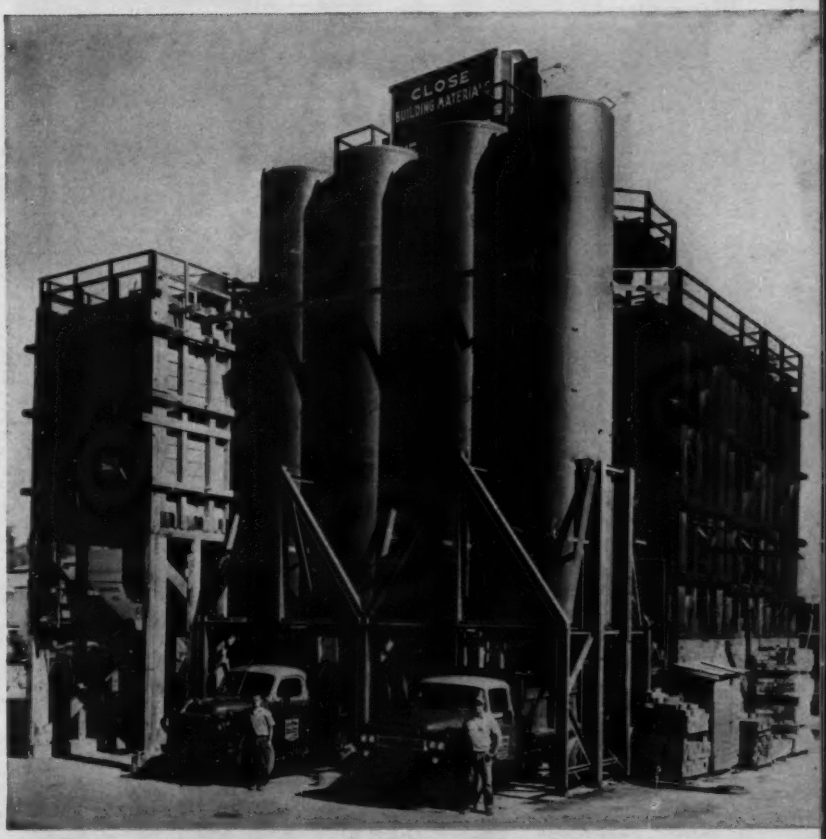
Close Building Materials, Inc., of Hayward, Calif., used the converted tank cars to replace wooden bins that had deteriorated.

The conversion was the idea of the company's manager, W. R. Van Alten. After locating the discarded tank cars, Van Alten turned to Herrick Iron Works, a structural steel fabricator in Hayward, for help. Herrick's investigations proved that the tanks were structurally sound and would require no bracing other than external supports.

All conversion work was done at the installation site. After the tank cars were delivered by trailer trucks, they were given a thorough steam cleaning. Then Herrick's welders removed the domes and closed all openings by welding steel plates in place. The 6½-ft-dia, 33½-ft-long tanks weigh about 10,500 lb empty. Each has a capacity of about 40 cu yd.

Frame supports for the tanks were shop-welded and assembled into units that could be erected easily. The entire installation was designed so that it could be moved to another location with a minimum of disassembly. For this reason, all field connections were made with high strength bolts.

To assure proper alignment of the tanks and supporting framework, the connection plates were bolted to the frames before the tanks were lifted into position. Then a crane lowered each tank into place and held it suspended in position while welders attached the connection plates to the tank. This procedure was followed to assure fast and accurate positioning whenever future dismantling and reassembly is required.



STORAGE FACILITY—Upended tanks, each holding about 40 cu yd, serve as storage bins for sand and gravel in supplier's yard. Tanks can be dismantled and re-erected easily.

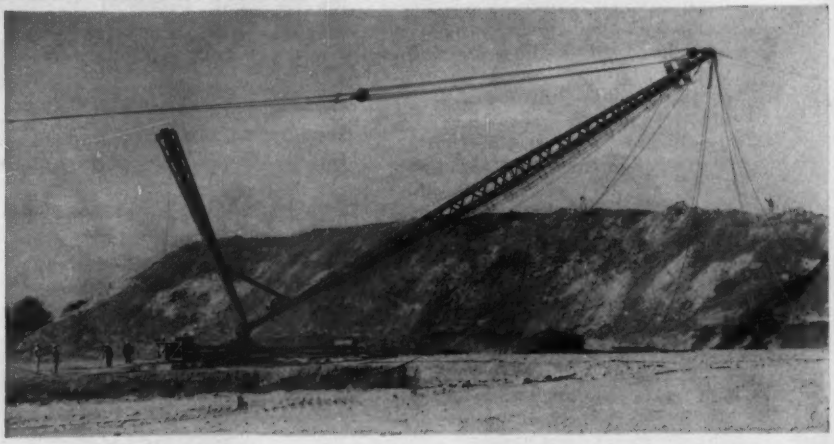
The new bins were set on the original foundations, and only minor concrete work was necessary for the installation. Field erection crews of Herrick Iron Works completed the entire project in less than one week. Reassembling the bins at another location will take only a fraction of that time.

Boom Helps Guy Derrick Pivot

FIRST STEP—The topping falls are extended over the upright 40-ft boom section to a bulldozer (out of sight) at the left. A roller made of a 6-in. piece of pipe revolving on a 1½-in.-dia shaft is located at the top of the boom section to reduce friction.

SECOND STEP—With the boom section serving as a gin pole, the mast begins to rise. The 155-ft mast is connected at the foot block by a hinge that is formed of heavy steel plate and a 4-in.-dia steel pin.

THIRD STEP—When the mast is about one-third of the way up, the topping falls rise free of the boom section. The temporary brace between mast and boom maintains the 90-deg angle between the members.

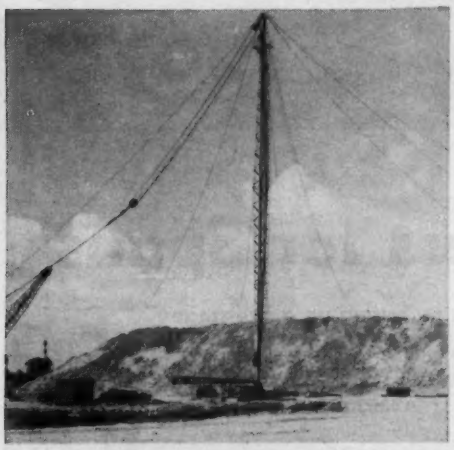


Into Place

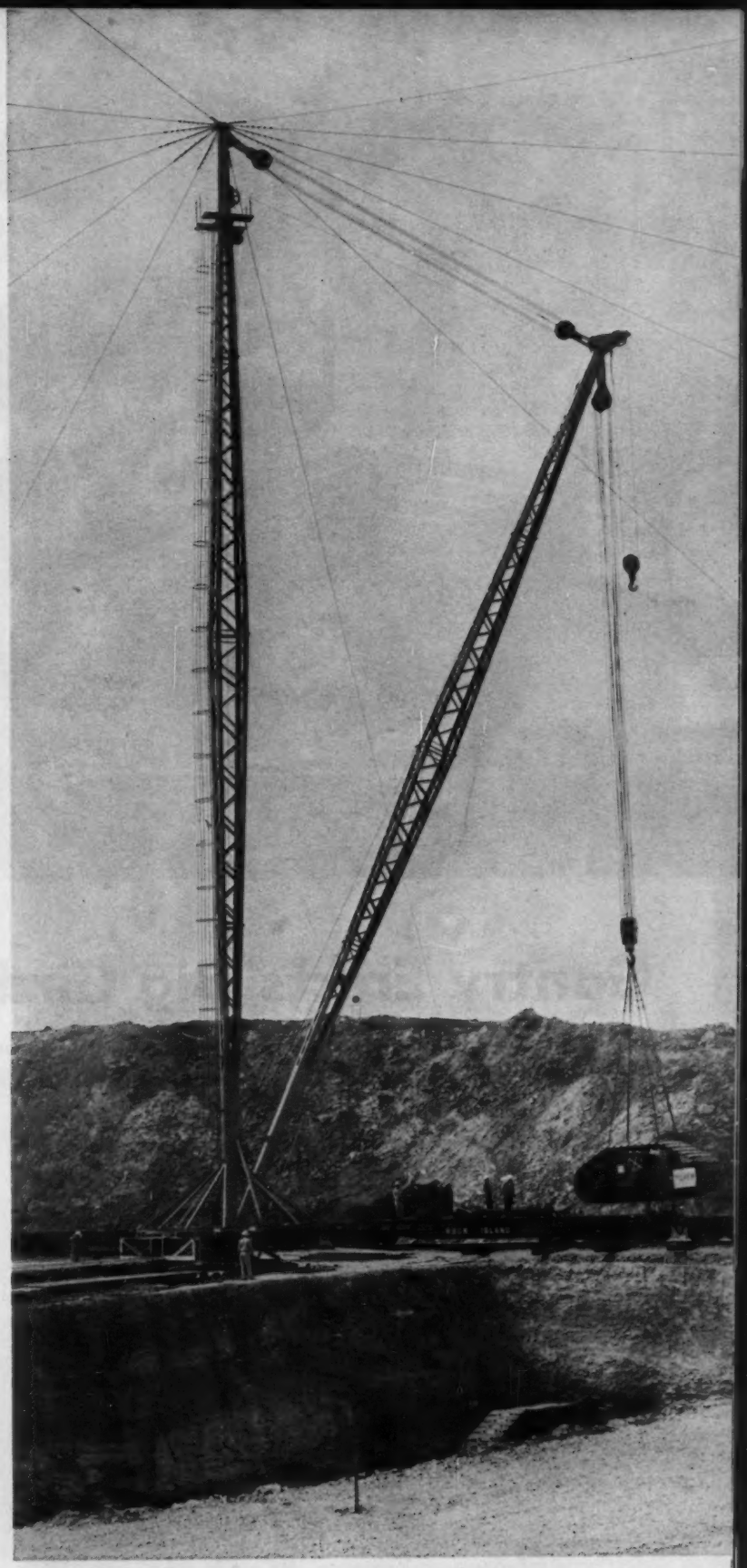
AS ANY RIGGER WILL testify, erecting a guy derrick can sometimes become an awkward struggle. Now, a long-time expert in the handling of heavy lifts has devised an erection method that does away with the need for sheer brute force.

The method was used by Havre de Grace Shipyard crews, under the direction of president Glen Wiley, to erect a derrick with a 155-ft mast at Farmingham, Ill. The guy derrick in the photos has a rated capacity of 75 tons at a 100-ft radius.

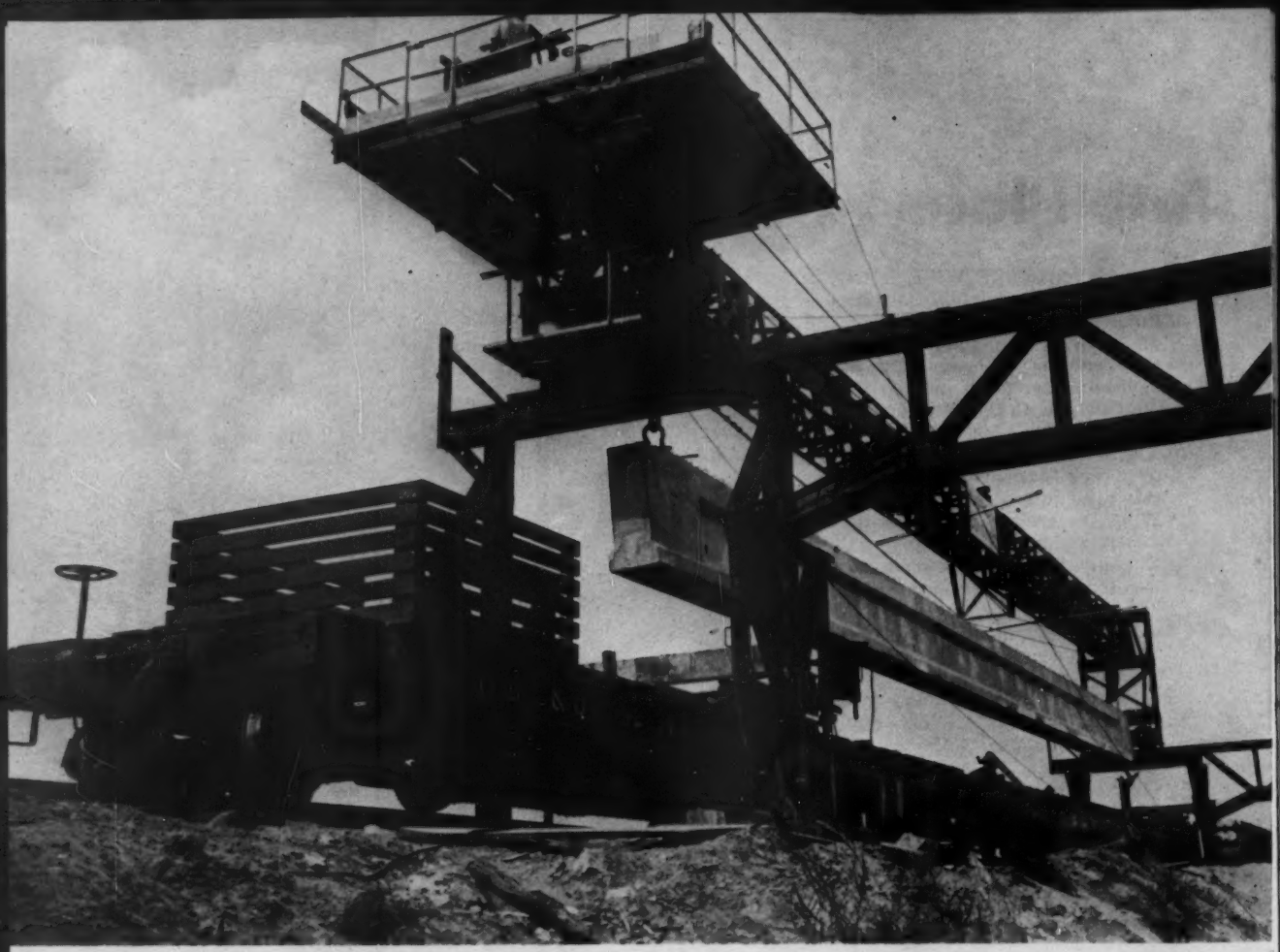
With a section of its own boom acting as a gin pole, the derrick's mast was pivoted from a horizontal position on the ground to an upright position. All guy ropes, sheaves, and pins were installed before the derrick was erected.



FOURTH STEP—In a vertical position, the mast is ready to have its guys tightened. Then the riggers add other sections of boom to the pinned section. During erection of the mast, two opposite guys control side sway.



FIFTH STEP—In operation, the guy derrick lifts a 56-ton track assembly belonging to a stripping shovel built by the Marion Power Shovel Co. To dismantle the derrick, riggers simply reverse the erection method.



Gantry Erects Big Girders for Spans

Massman puts bridge building on an assembly-line basis by setting up a five-stage work cycle. Each operation takes place separately within a pier-enclosing cell.

A CONTRACTOR-BUILT gantry crane placed 56-ton prestressed concrete girders as the last of five steps in an assembly-line method that speeded construction of twin bridge spans across the Platte River at Ashland, Neb.

The ingenious rig was instrumental in helping Massman Construction Co. of Kansas City meet an extremely tight schedule. The contract, which Massman won with a low bid of $1.5-million, allowed only 165 working days for completion of the project.

The structure consists of 14 twin spans supported by two rows of concrete piers set side by side at 88-ft centers. Each pier rests on two footing pads founded on prestressed concrete piles. Each of the 110-ft spans consists of six prestressed girders; four rows of cast-in-place diaphragms that tie the girders together; and a 6-in.-thick, 30-ft-wide deck slab.

The prestressed girders were shipped to the site on rail cars from the Nebraska Prestressed Concrete Co. plant at Lincoln. A 1,200-ft spur from the main line of the railroad carried the girders onto one of two parallel earth dikes built out into the river by Massman.

One dike crossed the river above the bridge site; the other was 200 ft away and below the bridge. At 110-ft intervals, cross-dikes connected the two parallel main dikes. In this manner, separate cells were formed to enclose each set of piers.

A 30,000-gpm Stang wellpoint system dewatered five of these cells at a time so that work on the piers could progress in the dry. Massman divided the job of pier building into five operations. Each operation took place in a separate cell and was completed in four days. This assembly-line technique allowed the contractor to complete two piers every four days.

When the first pair of piers were completed, a crew leapfrogged the wellpoint system ahead to the next cell in line. This was the first step in a new cycle. The other steps, in order, were driving piles, building footings, forming and pouring the pier structures, and erecting the prestressed girders.

The contractor-built gantry

RUGGED RIG—Left, gantry atop towers that straddle track lifts 56-ton girder from rail cars. Below, rig rides rails on trusses and beams to reach erection position.

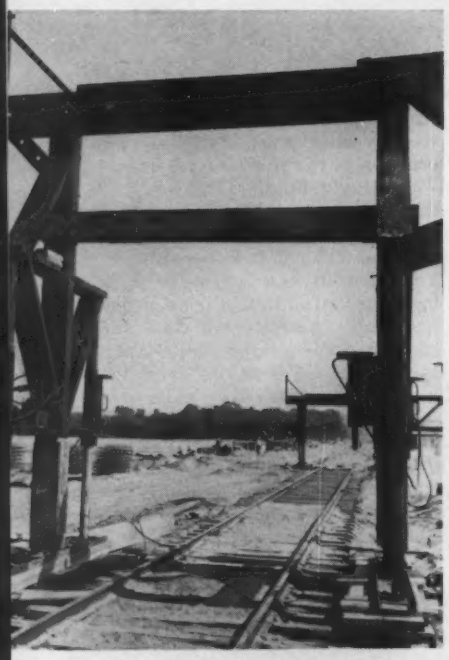
TWIN SPANS—Above, earth cells enclose piers that are built in five-stage work cycles. Rail cars deliver girders and piles over spur of railroad track on upstream dike.

crane made the last stage of the step-by-step work cycle — the erection of the prestressed girders —relatively simple. The heart of the rig was a 3-ft square boom section from a stiffleg derrick. It spanned 112 1/3 ft between rails. Towers with four legs made of 5-in. pipe straddled the railroad track on the upstream dike and supported the gantry over the flat cars in pick-up position. From the towers, the gantry rode rails supported by linking trusses and beams to reach erection position.

Trusses fabricated from 14WF stock spanned the 28 ft between the tower and the adjacent piers. These supported the 100-lb gantry rails. Trusses also spanned the 56-ft gap between each pair of piers. These interior trusses were made up of 21WF sections.

Atop the piers the gantry rails were welded to 12WF45 beams that extended the full 36-ft length of each pier. These beams were set at different levels. At one end, they were placed atop previously erected girders in the ad-

Built in Stages



TOWERS STRADDLE TRACK — Towers with four 5-in.-dia pipe legs at each end of gantry straddle track on upstream dike. Hinged jacks swing in to engage flat cars.

TRACTOR PULLS FLAT CAR—Crawler tractor pulls flat car loaded with two prestressed girders along track until it reaches pickup position under twin towers of gantry.

jacent span. Holes cut in strap plates welded to the bottom flange of the beams fitted over bolts set in the concrete girders for expansion joints. At the other end, the beams holding the gantry rails were set directly atop the piers. Here, holes cut in the bottom flange of the beams at the web fitted over anchor bolts in the piers.

The rails on which the gantry rode were set at different levels. A platform at the 7-ft-high near end of the gantry supported the operator and the hoisting mechanism. The other end of the gantry was 12½ ft high.

Lifting power was supplied by a Parkersburg torque converter hoist with double drums working off a single shaft. Both drums rotated at the same speed; leadline pull was 20,000 lb. Two niggerhead drums moved the gantry back and forth along the rails. Falls set 105 ft apart held the two blocks, each of which had seven parts of line. The line to the tackle at the hoist end of the gantry went to a gate block at the midpoint and then doubled back to maintain an even hoisting rate.

After girders had been positioned over one set of piers, hinged jacks mounted on the tower legs that straddled the railroad tracks made it easy to move the gantry to another erection position. With the gantry positioned over the towers, workmen swung the hinged jacks inboard so that they engaged the deck of a flat car below.

The jacks then raised the entire assembly off the tower legs, transferring the load to the flat car. A crawler tractor pulled the rail car along the track until the gantry was opposite another pair of piers.

Moving the gantry from one setup to another took about one day. A crane disassembled the trusses and beams that held the gantry rails into eight separate sections and transferred them to the new location.

Massman placed an average of 20 prestressed girders a week with the gantry. The efficiency of the erection method, plus constant improvement in each of the other four steps in the assembly-line production of the bridge, enabled Massman to shave 23 days off the original job schedule.

River Rages at the Start

The Platte is really two rivers. There is the surface flow, which can be—and last year was—a formidable construction problem. In April the river flooded and high water harassed the contractor well into June.

The Platte also is a subterranean river. An aquifier of sand and gravel to depths reaching 90 ft carries a tremendous flow of water beneath the river bed. Both surface and subterranean water had to be handled—by different methods—to prepare for construction of the bridge itself.

Massman handled the surface flow of the river by swinging it to one side with a diversion dike. The contractor built a 1,100-ft-long earth dike, starting above the bridge site and angling out from the bank until the surface flow was squeezed into a 300-ft-wide channel at the far side of the river. The diversion dike averaged 9 ft in height and tapered from 42 ft at the base to 24 ft at the top.

The original diversion dike remained in place until the 6-in. concrete deck of the first three twin spans was in place. Then Massman diverted the water to the other side with another wing dike so that the work cycle could continue, cell-by-cell, across the river. But first, Massman removed a 300-ft section of the upstream dike enclosing the cells and substituted a 20-ft-wide timber trestle consisting of five-pile bents at 20-ft intervals.

Construction of the trestle was speeded because of the way the tracks of the spur line traversing the interior dike were laid. Instead of staggering the ends of each pair of rails, Massman's crew made them even; each 30-ft section of rails and ties made an integral unit that could be picked up in one piece by a crane.

A wellpoint system designed by John W. Stang Corp. of Omaha handled subsurface water. The system consisted of connected rings that circle five cells. Each ring had 180 points, each 21 ft long, that went down about 7 ft below the bottom of the footing pads. Three 16-in. and five 12-in. pumps serviced the dewatering system.

A large number of gate valves was built into the wellpoint sys-

tem so that a crew could take up one ring and leapfrog it to the cell at the head of the line without interfering with the other rings. A Northwest Model 6 crane handled the transfer.

The second step in the five-stage cycle was piledriving. A Manitowoc 3900 crane equipped with 100-ft leads and a Link Belt 30,000-ft-lb diesel hammer handled piledriving. Driving time per 75-ft-long pile ranged from 30 to 45 min. Massman drove 10 of the 14 piles needed for each pier in an average day. A four-point pickup avoided possible fracture of the 95-ft-long piles that support the abutments. Manufactured by Nebraska Prestressed Concrete Co., the piles were delivered to the job by rail.

Next step in the cycle was to construct the footing pads that support each pier. First, a crew cut off the piles to cap grade with air hammers and cutting torches. Then a crane set footing forms in two complete units, one for each pad, and the crew placed concrete delivered by transit-mix trucks. The trucks reached the pour area via the downstream dike, which was reserved for just such traffic.

It took four days to form and pour the piers themselves. After positioning the four preassembled components that made a pier form, a reinforcing cage was placed in one piece. A Northwest 80D crane placed concrete with a 2-yd bucket. Massman stripped forms the day after the pour and used water from the well point system to speed curing.

Rail delivery in two-beams-per-flat-car lots of the prestressed girders set the stage for the final step of the cycle—erection by the job-built gantry. But first the outfit fabricating the members had a big job to do. In order to meet production deadlines, Nebraska Prestressed used a combination of pretensioning and post-tensioning in the manufacture of the girders.

The company built a double casting bed 400 ft long to assure an output of two beams a day, based on a three-day cycle. Three beams were cast on each of the two lines. Jacks stretched 24 tendons of ½-in. dia to a tension of 605,000 lb for each girder. Then a crew poured concrete and left the girders to cook in a steam bath at about 140 deg for 16 hr.

This quickly built up concrete strength to 4,000 psi. The green beams were transferred from the casting bed to stockpiles, where the girders attained an ultimate strength of 5,000 psi after 28 days.

At that time, crews moved in with portable jacking equipment to post-tension the girders with three cables made of twelve ½-in. strands. Anchors for the cables were manufactured by Freyssinet of France especially for the job. They were the largest ever used in this kind of work. After being tested electronically, the girders were transferred by a Travelift straddle buggy with a 32-ft gage to flat cars for delivery to the site.

Men on the Job

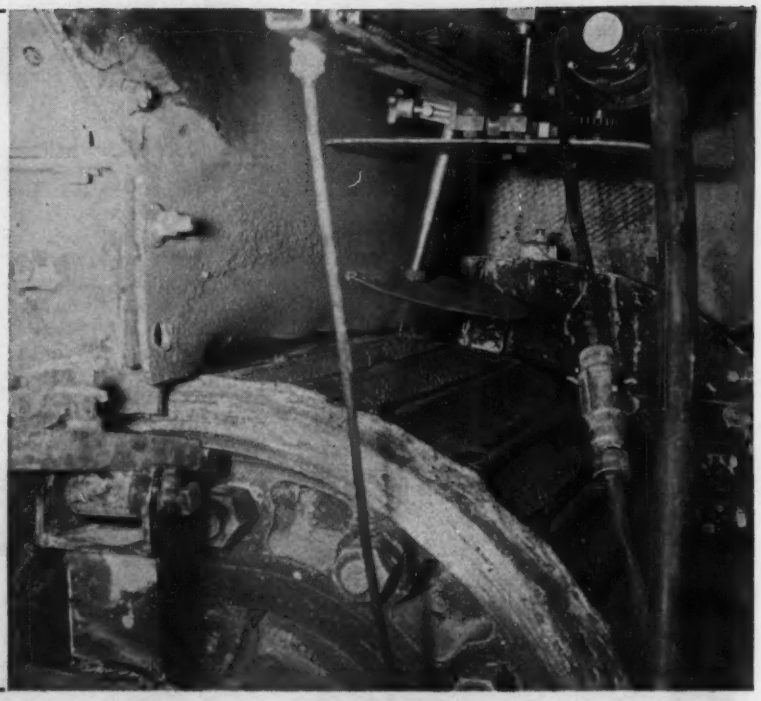
In charge at the site for Massman as project superintendent was K. W. Philo. Supervising construction for the Nebraska Dept. of Roads as acting engineer was John Hossack; A. H. Dederman was bridge engineer. Jack Way is general manager of Nebraska Prestressed Concrete Co.

WELLPOINTS DEWATER CELLS—Stang wellpoint system consisting of five connected rings with 1,800 points, each 21 ft long, dewaters five pier-enclosing cells at a time.

Announcing the

STOODY CRUSHERMATIC

a system for automatically rebuilding and hard-facing crusher rolls ***in position!***



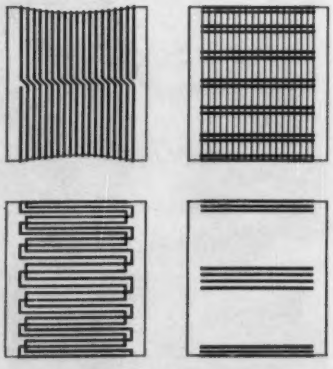
The Stoody CRUSHERMATIC is a new tool for the aggregate producing industry! It cuts rebuilding and hard-facing time on crusher rolls as much as 300 to 400% over manual welding and is 200% faster than hand-held semi-automatic welding!

Now you can gain *50% more crushing time*—get an *additional 30% more production* from the same crusher because rolls are *kept* out to size...are far more efficient!

Crushermatic is completely portable... ready to use in 20 minutes. It consists of a reciprocating, motorized carriage and wire nozzle supported on a rail over the crusher roll. Continuous wire, fed through the nozzle, can be deposited in a variety of weld patterns—all made possible by a versatile electronic control and an independent slow-speed roll drive. Crushermatic deposits up to 20 lbs. per hour, utilizing a standard semi-automatic wire feeding unit and power supply capable of 100% duty cycle. Deposits are sounder and more uniform than with manual or hand-held semi-automatic application.

Crushermatic does not replace your weldor—it simply removes him from the cramped smoke-filled area of welding. He sets up the unit, supervises welding *from outside the crusher.* It's safer, faster and eliminates long hours of back-breaking labor.

Detailed Crushermatic data is available from your Stoody Distributor—check the Yellow Pages of your phone book—or write direct!



A wide range of weld patterns can be set up with the electronic controls for rebuilding any specific wear problem.

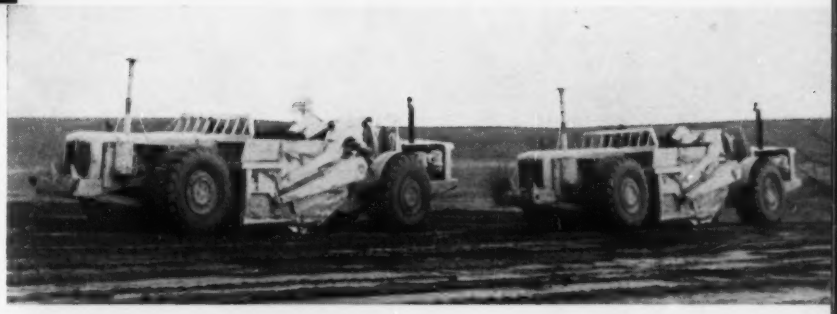
STOODY COMPANY
11902 E. Slauson Avenue, Whittier, California

Visit our booth at the welding show
New York City, April 1961

Circle 108 *on Reader Service Card*

ROCKS COME OUT—Euclid TC-12 dozer with Gar Wood ripper tugs at boulder. It will be broken up and go into a rock fill.

Ripper Clears Pits, Scrapers Go To Work



SCRAPERS MOVE IN — Two Euclid TS-24's strip topsoil in big centrally located pit that will furnish 800,000 yd.

Langenfelder doubles production and makes scraper operation practical in boulder studded borrow pits by sorting material and placing earth and rock separately.

A SYSTEM that allows scrapers to work in borrow pits studded with big boulders has doubled earthmoving production for Baltimore contractor C. J. Langenfelder & Son, Inc.

Since last summer, when the contractor started work on a 5-mi stretch of Interstate Route 81 near Carlisle, Pa., Langenfelder's big problem has been to obtain enough suitable borrow material. Out of a total of 1,680,000 yd of excavation required for the job, 1,100,000 yd is borrow. And the rolling Cumberland Valley hills in the vicinity are loaded with boulders.

Off To Fast Start

The job started smoothly. In a large, centrally located pit adjacent to the right-of-way, a 6-yd Lima shovel loading a fleet of 10 Euclid bottom dumps accounted for almost 30% of the total required yardage in the first three months. And, nearby, a 2½-yd Northwest 80D shovel loaded shot rock into three Euclid rear dumps at a fast clip.

Although this equipment moved about 10,000 yd per 10-hr day, Langenfelder desired to double production by bringing in two scraper spreads. But to do so, the contractor had to work out a scheme that would make scraper operation practical in spite of the abundance of boulders.

Here's the system that is solving Langenfelder's problem. First a Euclid TC-12 with a Gar Wood ripper roots out boulders ranging up to 6 ft in dia and pushes them aside into a pile. A crew drills and shoots the bigger boulders and a crane with a headache ball reduces all oversize chunks to a maximum size of 18 in. Then, a dozer pushes them to a nearby fill. If the closest fill area is more than a few hundred feet away, the contractors brings in a small shovel to load the rock into wagons.

This technique for handling boulders works so well that Langenfelder has three Euclid TS-24 scrapers making short hauls out of the main borrow pit, and four Caterpillar tractor-drawn pans at work in a smaller pit opened up at the western end of the job. Langenfelder also has opened up a third borrow pit at the extreme eastern end of the project. But the centrally located pit is the big one. The contractor expects to get as much as 800,000 yd out of this 80-acre borrow area.

Langenfelder's scheme for handling the boulders has given the contractor another money-making advantage. Specifications on this job allow fill consisting of at least 80% rock to be placed in 2-ft lifts. But when the fill material contains less than 80% rock, the contractor is limited to 8-in. lifts. With plenty of shot rock available, the extra depth of lift speeds placement.

Bid Hinges on Borrow

Even before bidding on the job, Langenfelder got the jump on its competition by sewing up rights to borrow areas near the job site. The contract did offer an option that allowed a contractor to haul in fill from a source about 2½ mi from the job. Material at this source was better than that obtainable in Langenfelder's pits, but the catch was that the contractor bidding the option could not use off-highway haul units. These were ruled out to protect local streets. The on-site borrow pits—and a well-planned scheme for getting the most out of them—gave Langenfelder the edge it needed to bid low.

Contract price for the project is $4.5 million. Langenfelder project manager Russel E. Strohn expects to clean up earthmoving this spring in plenty of time to get an early start on paving. Superintendent on the job is Harry McGonigal. Engineer is John T. McKinnon and master mechanic in charge of equipment maintenance is Peter Cutler.

Gulf® products and service help V. N. Green on 4-million cubic yard excavation job...

The hills around Charleston, W.Va., present no easy task when it comes to building highways. Valleys, steep slopes, meandering creeks, soft shale and plenty of hard rock mean peak performance from equipment is a must.

When V. N. Green and Company, Inc., Charleston, W. Va., started a 2.8-mile stretch of Interstate 77, they planned ahead to assure peak equipment performance. Example: central fuel storage with underground tanks on the job site. These tanks were used to store 12,000 gallons of Gulf Dieselect® fuel and 4,000 gallons of Good Gulf® gasoline.

"With 60 pieces of equipment working 20 hours a day, we averaged 32,000 cubic yards of earth and rock each day," said Harry Staples, Maintenance Superintendent. "You don't worry about fuel until you see what it takes to keep that much equipment going 20 hours a day," he continued. "That's where our underground storage tanks came in handy. And thanks to good Gulf service our fuel supply never even ran low. Furthermore, our gasoline and diesel engines delivered top power and performance."

To get the most out of your equipment try clean burning Gulf fuels on your next project. You'll soon

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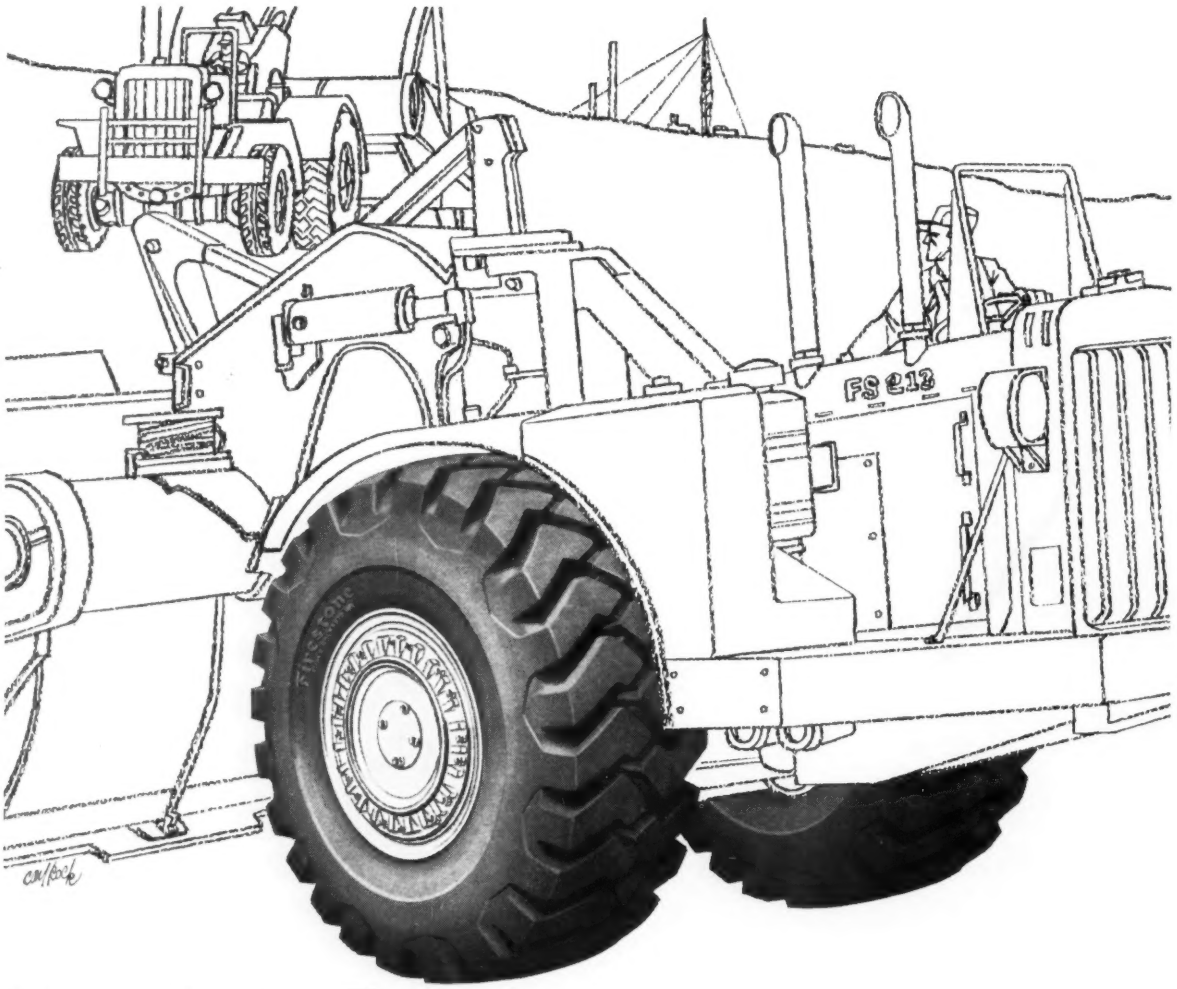
GULF

H. F. Johnson, right, Project Superintendent, and Ray Kerwood, Gulf Sales Engineer. You get expert, on-the-job engineering service from Gulf.

SP-9996



Job records prove Firestone's

2-WAY PLAN KEEPS PAYLOADS MOVING!

1. **Firestone Giant Tires** help you keep the cycle going with minimum downtime losses. Firestone off-the-highway tires are toughened by Shock-Fortified nylon cord to resist impact. With exclusive Firestone Rubber-X they're the longest-wearing Firestone off-the-highway tires ever built.

2. **Firestone Giant Tire Service Experts** match and fit Firestones to your equipment, large and small, for top on-the-job performance. And it never ends! These men provide 24-hour maintenance for every Firestone tire on the job.

To learn how this 2-Way Giant Tire Plan helps cut operating costs see your Firestone Dealer or Store. Or, write: Manager, Off-The-Highway Tires, The Firestone Tire & Rubber Company, Akron, Ohio. **Always Specify Firestone Tires When Ordering New Equipment.**

Tune in Eyewitness to History every Friday evening, CBS Television Network

Firestone

BETTER RUBBER FROM START TO FINISH

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Circle 111 *on Reader Service Card*

Circle 112 *on Reader Service Card*

When you talk **tough construction jobs** ...you talk **Mack's language**

. . . *that's why*

THE BIG JOBS GO BETTER WITH MACKS

Whether you're building an expressway or hauling rock, digging out the bed for a skyscraper or moving a mountain . . . if it's the kind of job that means hauling heavy loads at a profit, it's the kind of job for a Mack.

Take a look around any big construction job and you'll notice this: The tougher the job, the more you'll see Macks. There are plenty of good reasons for using them. For instance, Mack makes trucks that get jobs done on time . . . not just when new, but long after even other so-called heavy-duty vehicles have outlived their usefulness. Not just when the going is good, but under all operating conditions.

But most important, Mack truck dependability pays off in profitable, lowest-cost operation, regardless of initial price.

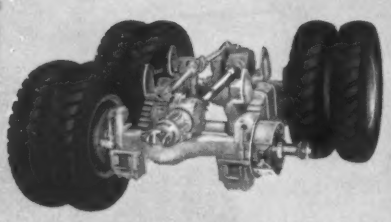
Mack vehicles—with rated gross capacities from 26,000 to 200,000 lbs.—are built for enduring performance. Mack-built Thermodyne® gasoline or diesel engines range from 170 hp to 225 hp and deliver maximum torque at low r.p.m. Famous Mack transmissions—five to twenty speed ranges—have ideally spaced ratios to give drivers smooth, effortless control through all speeds. Mack-engineered steering systems, providing sharp turning angles and easy handling characteristics, enable Macks to maneuver faster, squeeze in extra trips per shift. Mack's unique Balanced Bogie with PowerDivider four-wheel, rear-axle drive delivers a bias of power to the wheels with traction. These and many more features make Macks the performance and economy leaders of the industry.

MACK

FIRST NAME FOR

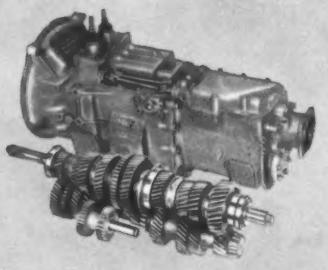
TRUCKS

MADE BY **MACK**



MADE BY **MACK**

MADE BY **MACK**



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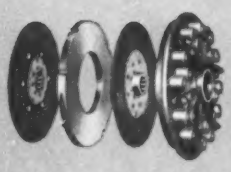

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MACK STANDS FOR

UNDIVIDED RESPONSIBILITY

You get Undivided Responsibility when you buy a Mack. Undivided because Mack practices Balanced Design—building far more of its vital truck components than any other truck maker in the heavy-duty field.

But what of other manufacturers? Without exception they buy many or all of their major components from outside vendors . . . engines, clutches, transmissions, front and rear axles, and drives.

Too often this means split responsibility. Who guarantees the component? Who provides the service on it? Sometimes the truck manufacturer . . . sometimes the component manufacturer.

Is this good? Mack feels it is not. When you purchase a Mack you must receive unqualified satisfaction. To insure this satisfaction, Mack insists on building most of its vital components. In this way Mack not only controls the quality of its components, but it can be sure its components will work in harmony . . . as an integrated unit.

You cannot have Balanced Design with mass produced parts—parts built to the lowest common denominator of a broad area of manufacturers. For instance, how can the same transmission fit equally well behind a gasoline engine of 400 cu. in. displacement and a diesel engine with a displacement of over 700 cu. in.? It can't—not with such a wide difference in torque output. All you can have is a lower level of standardization. And why pay a difference of a thousand dollars or more when the vital components of the highest priced competitive makes are identical in quality, construction, design and manufacture to the vital components of the lowest priced makes. Peel off the skin and they all look the same.

Not so with Mack and that's why we can assume Undivided Responsibility. We built it and we stand behind it—100%. Who else can say the same?

Mack Trucks, Inc., Plainfield, New Jersey. Mack Trucks of Canada, Ltd., Toronto, Ontario.

MACK for over 8 straight years NO. 1 by far in sales of diesel trucks

IT'S PART OF THE LANGUAGE . . . BUILT LIKE A Mack

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Safer, Brighter,
Easier to Service
with Swivel Head and
Double-Beam Warning

DIETZ

NEW Visi-Flash® Barricade Flashers

No. 665

No. 675

Offering the last word in a flasher optical system . . . one that concentrates more light on the danger or obstacle, re-inforcing the flashing light with a brilliant fringe of reflected light from the headlamps of oncoming traffic.

Flashers that are easier to service, that require less servicing per hour of use, and that will turn on and off as daylight fades or dawns.

No mechanical switches or other moving parts to consume current or cause trouble. Wide choice of low-drain transistorized circuits offer an extensive range of flash rates. Drain on batteries is so slight that even the two-cell No. 665 model will burn about 1500 hours, while the six-cell No. 675 will burn about 4500 hours.

10 IMPORTANT FEATURES

- Big 7¼" lens, especially for flasher use
- Optional ½" reflector rim offers full 10 sq. in. of reflecting surface
- High-brightness neon lamp or standard filament
- Can be rotated 180° to cover any approach angle
- Choice of flash rates and candlepower
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- Diecast visor deflects snow, rain, sun and streetlights
- Attached to barricade by tamper-proof bolt
- Single screw, always fastened to head, affords easy servicing of lenses and bulb
- Rugged 18-gauge steel body

Also available in Canada

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225 Wilkinson St.,
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Please send complete information on your improved Visi-Flash Warning Signals, Nos. 665 and 675.

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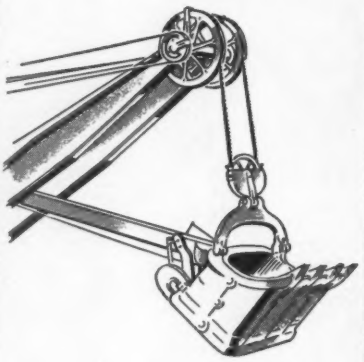
◀ *Circle 116 on Reader Service Card*

Circle 117 on Reader Service Card

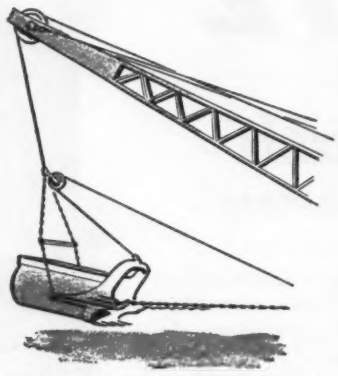
Is "any old" wire rope out of "any old" stock good enough?

Not when you can get what you need from the best combination of wearing qualities in the right Macwhyte!

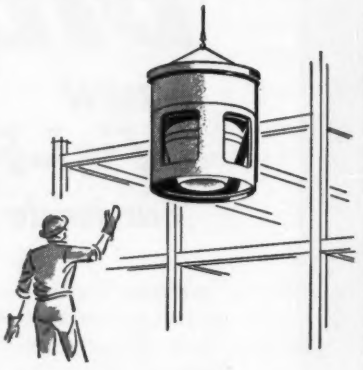
NEED EXTRA STRENGTH?



NEED RESISTANCE TO ABRASION?



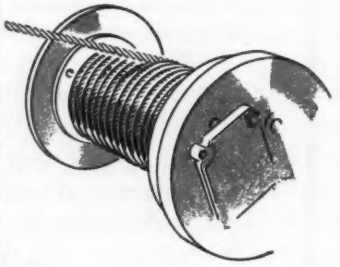
NEED A NON-ROTATING ROPE?



WHICH COMBINATION OF THESE WEARING QUALITIES DO YOU NEED?

NEED RESISTANCE TO CORROSION?

NEED RESISTANCE TO BENDING FATIGUE?



NEED RESISTANCE TO CRUSHING?

Stocked for Immediate delivery

You can place your trust in Macwhyte Distributors to give you the right wire rope for your equipment.

Macwhyte manufactures a thousand and one wire ropes to give you the right combination of wearing qualities your equipment demands.

For lowest-cost service, ask for the right Macwhyte wire rope specially suited to your equipment. Circular 6025, free on request, explains why you can save with the right wire rope on your equipment.

ASK ABOUT MACWHYTE'S NEW 7-FLEX® WIRE ROPE

MACWHYTE WIRE ROPE COMPANY 2900 FOURTEENTH AVENUE KENOSHA, WISCONSIN

Wire Rope Manufacturing Specialists since 1896

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Circle 118 on Reader Service Card

Twin drills that ride on the dozer blades of tractors handle all preliminary blast-hole drilling for a 306-ft-deep side-hill rock cut in the rugged mountains of northwest Georgia. The job calls for plenty of blasting know-how to keep a bordering river free of shot rock.

RUGGED RIG—Two Gardner-Denver drills mounted on the dozer blade of a Cat D8 make 3½-in.-dia blast holes. The drills can pivot or slide along a 14-ft-long supporting pipe that is mounted in front of the blade.

HOW THEY'RE MOUNTED — Clamps welded to drill masts fits around 3½-in.-dia pipe, which is supported by 10-in. channel welded to bottom of dozer blade. Other steel members brace pipe to top of blade.

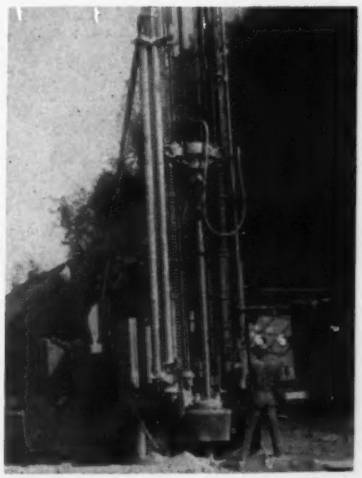
Dozer-Mounted Drills Help Carve Deep Cut

DRILLS MOUNTED IN PAIRS on the dozer blades of crawler tractors are helping a contractor carve a 306-ft-deep side-hill cut through hard shale and sandrock in the mountains of northwest Georgia.

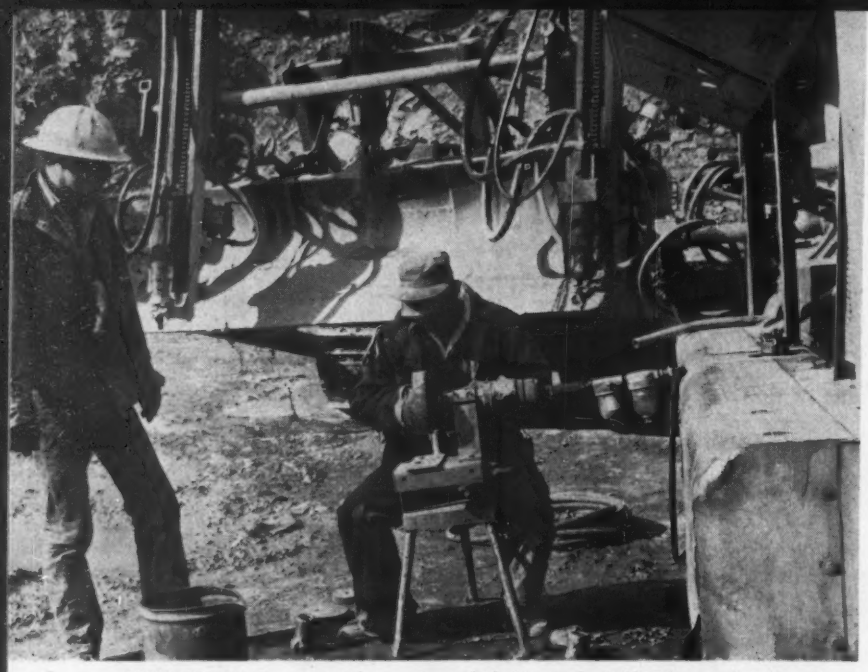
The contractor - adapted rigs, consisting of Gardner - Denver drills and Cat D8 tractors, are worth their weight in gold on this rugged $1.6-million job. The contract, held by Ledbetter-Johnson Construction Co. of Rome, Ga., calls for the removal of 2 million yd of earth along a 2½-mi section of Interstate 75 south of Ringgold. Of the total amount, 1½ million yd is in a 2,200-ft-long cut, and most of it is rock.

Frank Lentz, project superintendent, got the idea for mounting two drill masts on one dozer blade about 4 yr ago, and he has been using the system with success ever since. With a D8 as a carrier, the drills can go just about anywhere.

To mount twin drills on a D8, a clamp is welded to each drill mast. The clamps fit around a 14-ft-long, 3½-in. dia pipe that extends horizontally about 3 ft



ROTARY DRILL—Large Robbins rotary drill makes 9-in.-dia blast holes from 50 to 75 ft deep on a 20x22-ft grid pattern. Mast is lowered only when drill is relocated.



GRINDER—Workmen regrinds tungsten-carbide bits in the field with a small Keller grinder powered by an air motor that attaches easily to any of the G-D compressors on the job.

brought down to grade in five benches. The first bench is 131 ft deep and the next three are each 50 ft deep. The final bench, where work is now taking place, is 25 ft deep. The cut is on a 2½:1 slope.

While the terrain is too varied and rugged for the contractor to stick to a rigid drilling schedule, crews and equipment work on a sequence that goes something like this:

First, the G-D drills make plumb 3½-in.-dia, 20-ft-deep blast holes in a 9x10-ft pattern. The area covered by the blast holes varies, but it always extends across the width of the bench. Once the area has been shot and cleared, the large rotary drill moves in to make 9-in.-dia blast holes from 50 to 75 ft deep on a 20x22-ft pattern. A 900-cfm G-D compressor towed by a tractor powers the drill.

continued on page 122

DOZER-MOUNTED DRILLS . . . *continued*

in front of and 2 ft above the dozer blade. The weight of the pipe is supported by two 5-ft-long, 10-in. channels that run diagonally from the bottom of the blade up to the pipe. The pipe also is braced back to the top of the blade with additional steel members that consist mainly of scrap steel that the contractor happened to have laying around the shop. All connections are welded.

By loosening the clamps, the drill masts can swing at any angle or slide along the supporting pipe. When a blast hole is completed, the drills are raised by lifting the dozer blade and then the whole rig moves ahead. The D8 tows a 600-cfm compressor, which provides enough air to power both drills.

Two of the twin-drill rigs are on the job to make shallow 3½-in.-dia. holes. For holes of greater diameter and depth, the contractor uses a Robbins rotary drill, also mounted on a D8 crawler tractor.

One of the twin-drill rigs proved its worth right at the start of work when two Cat D8's made their way to the top of the cut. The first cleared a swath for the second, which carried two drills on its blade. Six to eight blast holes were drilled and shot at a time to clear a work area for additional equipment.

Since then the cut has been

BIG LIFT—A Northwest 2½-yd shovel lifts a giant boulder that failed to break up after a shot. Some of the shot rock to be used as base material must be broken with jackhammers.

TELSMITH designed for extreme flexibility with a wide variety of products

TELSMITH EQUIPMENT in this plant has two circuits: one with 24″ x 5′ Plate Feeder, 4′ x 10′ 2-deck Scalper, 4′ x 12′ 3-deck Vibro-King wet screen, 20″ x 15′ Twin Screw Classifier for concrete sand, 48″ x 30′ Sand Drag for mason sand. Gravel circuit has 10″ x 30″ Jaw Primary Crusher, 4′ x 10′ 1-deck Vibro-King dry sizing screen, 36-FC Gyrasphere Secondary Crusher, and a second 4′ x 12′ 3-deck Vibro-King wet screen.

This plant was tailor-made by Telsmith to produce aggregates for its owner's bituminous concrete plant, and for commercial use in the area. Products are Pennsylvania Highway Dept. specs Nos. 3A, 2A, 2B, 1B, Class A concrete sand, mason sand, and asphalt sand. In addition, minus 1″ and minus ½″ round gravel may be extracted and blended into final product either crushed or uncrushed when making crushed concrete specs. Plant capacity is 100-125 tph. Plant was designed and its Telsmith equipment supplied by A. R. Amos Co., Telsmith distributor, Philadelphia, Pa.

Send for Bulletin 266.

G-33-960

▲ Keystone Pavement & Construction Co. Lake Ariel, Pa. plant (general view).

◀ 24″ x 5′ Plate Feeder, 4′ x 10′ 2-deck dry Scalper, 10″ x 30″ Jaw Primary Crusher.

◀ 4′ x 10′ 1-deck Vibro-King sizer screen and 36-FC Gyrasphere Secondary Crusher.

Two 4′ x 12′ 3-deck Vibro-King wet screens, 20″ x 15′ Twin ▼ Screw Classifier, 48″ x 30′ Sand Drag.

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Circle 121 on Reader Service Card

DOZER-MOUNTED DRILLS . . .

continued from page 120

LOADING DIRT—Another Northwest shovel loads one of four 11-yd Koehring Dumpsters on the job. River that flows in the background has to be kept free of debris.

LOADING ROCK—A Koehring 2½-yd shovel works at the face of the cut loading Eucs that pull in at either side. Trucks carry off about 8,800 yd of shattered rock a day.

All drills are equipped with tungsten-carbide bits, which are reground in the field. A small Keller grinder powered by an air motor attached to any of the compressors on the job gives practically trouble-free service.

The contractor sets off two or three of the smaller pattern shots a day and usually two of the larger pattern shots a week. Following the smaller shots, the area is mucked out and levelled. This allows the rotary drill to work for several days in the same area; its mast is lowered only when it must be relocated. So far the system has paid off. Every time the rotary has started a drill pattern it has finished it.

A big headache for the contractor is a river that flows parallel to the roadbed about 200 ft below. Ordinarily, the blasting pattern would call for pulling the shots toward the open end of the cut, but in this case the river must be kept clear of debris. To cope with this situation, the contractor uses a pattern of millisecond delays that throws the shattered rock away from the river. On the largest shots, as many as 17 delays are used.

Blast holes are loaded with Monsanto ammonium nitrate primed with Hercules or Atlas 75% gelatin dynamite. The contractor uses about 1 lb of explosive per cu yd of rock and this seems to work pretty well. A major blast shatters about 12,000 yd of rock.

About 500,000 yd of shot rock will be placed as base material on the road bed; the rest is spoil. While fragmentation is good, the contractor still must break up some rock with jackhammers before it can be used as base.

A large spread of shovels, front-end loaders, and trucks move about 8,800 yd of shattered rock in a 9-hr day. The haul distance to the spoil area averages about 2,000 ft.

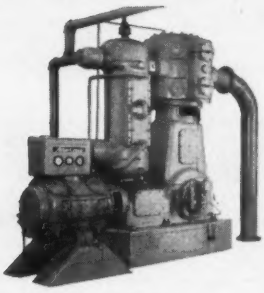
Three Northwest 2½-yd shovels, one Koehring 2½-yd shovel, one Bucyrus-Erie 2-yd shovel, and a Cat 977 Traxcavator with a 2½-yd bucket load a fleet of 25 trucks. These include fifteen 11-to-13-yd Eucs, four Koehring 11-yd Dumpseters, and six 11-yd tandem Macks. The trucks make a total of about 1,100 trips per day with an average rock load of 8 yd.

The shovels are spotted around the job. Loading rock at the working face of the cut is the Koehring shovel and the Traxcavator. The shovel works at the center of the face while trucks pull in at either side. The tractor-shovel cleans up along the sides of the cut. A No. 12 Cat grader patrols the haul roads.

The contractor began work last February and expects to be finished later this spring. Paving will be handled under a separate contract.

Besides Lentz, other men on the job for Ledbetter-Johnson are John Hatton, assistant project superintendent; and D. T. Leverett, drill and powder superintendent. Belton Burleyson is senior resident engineer and William Leonard is resident engineer for the State Highway Department of Georgia.

Which... ATLAS COPCO COMPRESSOR meets your needs best?



AR Heavy-Duty Compressors
More air per horsepower than any comparable compressor! For continuous, full-load operation. "L" angle, 2-stage, double acting. Water cooled. Standard models provide 382 to 3210 cfm free-air delivery at 100 psi; only 76-590 hp required! (Can be supplied for other working pressures on request.)

What's your compressor requirement? Need an installation large enough to provide air for all your needs? Or would a small, compact unit for auxiliary operation solve your immediate problem? Either way—and for a wide range of applications between these extremes—Atlas Copco has the compressor for you!

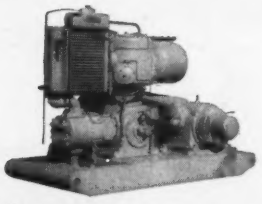
No matter which you choose, you'll get these proven advantages from Atlas Copco:

(1) More air per horsepower—less power consumption than other comparable units!

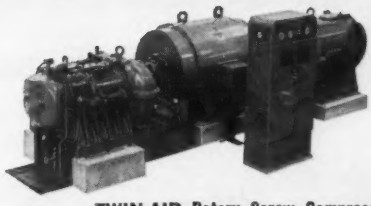
(2) Really low maintenance (one example — $3.10 after 10,000 hours' operation)!

(3) Specifications are guaranteed free-air delivery — you get exactly what you order!

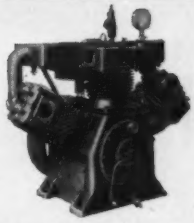
Get all the facts now—and compare! The coupon below will bring you a free catalog. (No obligation, of course.)



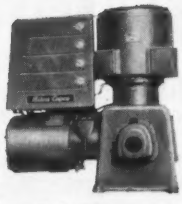
AR-L Heavy-Duty Compressors
Same basic construction as the AR Series, but provided with an air-cooled intercooler and air-cooled radiator for the cylinder water. Fan on compressor flywheel cools radiators. Perfect for arid areas or where difficult to bring in water. Both stationary and skid-mounted models available.



TWIN-AIR Rotary Screw Compressors
Brand new! "Twin-Air" Compressors offer capacities from 6,900 to 19,400 cfm at working pressures up to 115 psi. And, you get completely *oil-free* delivery of air or gas, since no lubrication is required — timing gears maintain small clearances between precision-mounted rotors, eliminating friction (and the necessity of oil) in compression chamber.



CT Air-Cooled Compressors
Stationary, or skid-mounted compressors for use where air demand is between 50 and 300 cfm. Totally air-cooled. Cylinder arrangement designed for smooth, vibration-free operation. Compact, rugged—for continuous, 24-hour trouble-free service. Highly efficient; low on maintenance costs.



ER-6 Heavy-Duty Compressors
New! Fundamental improvements over conventional heavy-duty compressors reduce power requirements (18.3 hp/100 cfm at 100 psi, full load); provide totally enclosed design; and save on floor space. Capacities to 1,140 cfm; standard instruments and safety devices.

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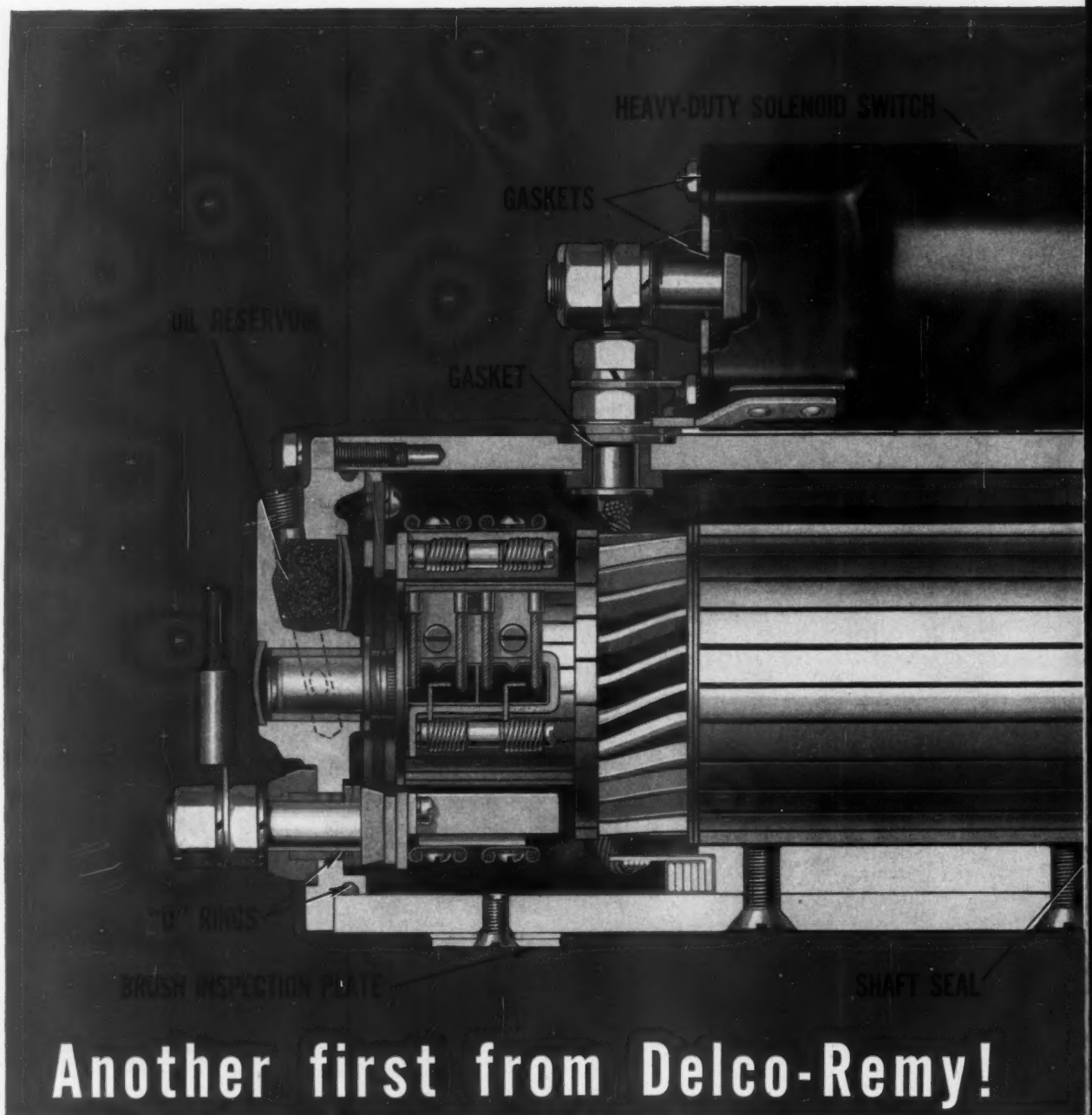


Another first from Delco-Remy!

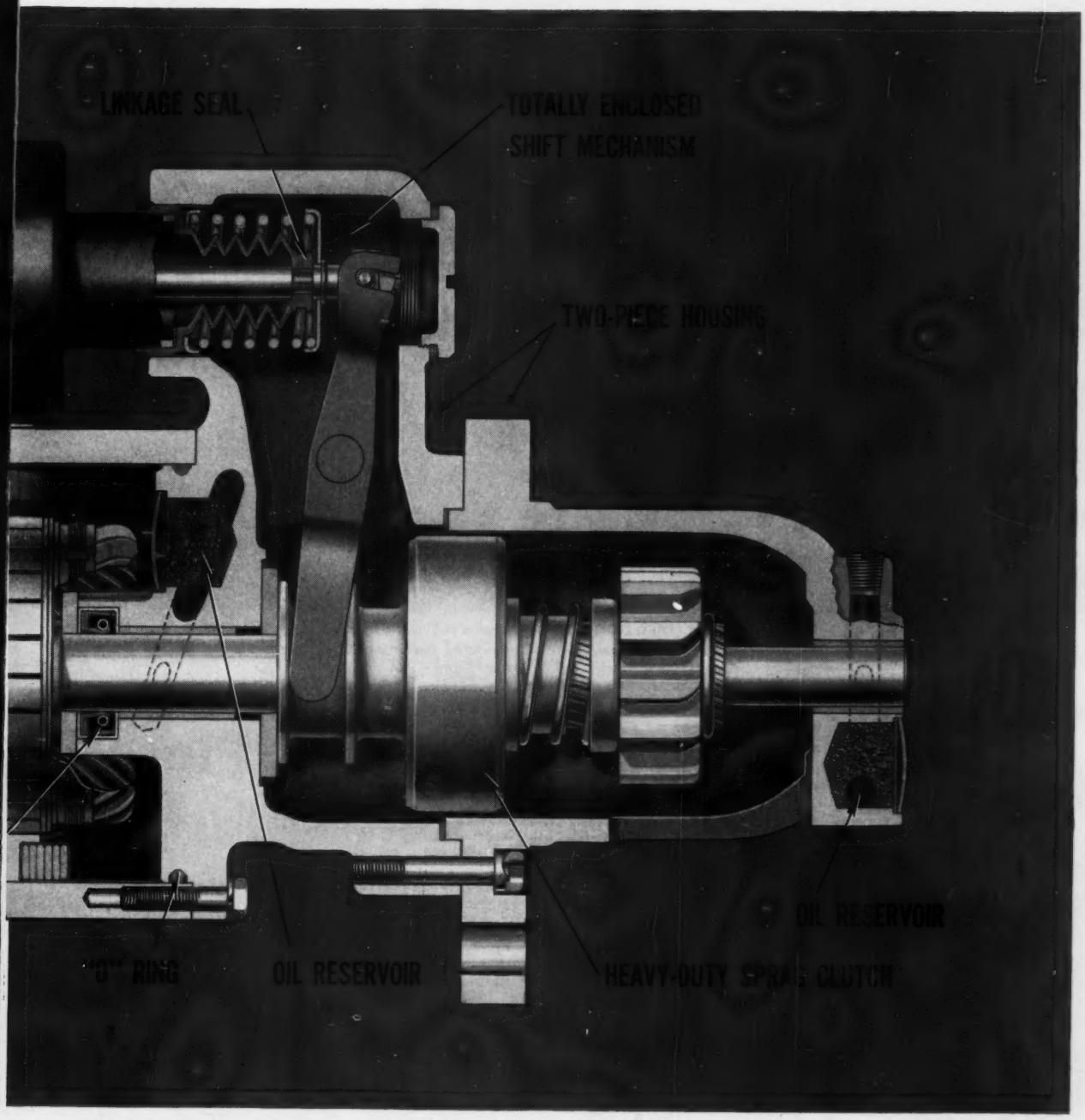
NEW DELCO-REMY HIGH-OUTPUT MOTOR

Completely new series of high-output cranking motors! These 12-volt motors have the torque and speed to do the same job as 24-volt motors of equal size *and on the same battery power.* No need for series-parallel switches and their complicated wiring on engines up to 900 cubic inches. These solenoid-operated, over-running clutch type heavy-duty cranking motors come with special two-piece drive housings that permit 24 different motor mounting positions. Their new 50% longer brushes, together with sealing rings (optional) and large oil reservoirs (optional), assure extra-long operating time between overhauls.

TOTALLY ENCLOSED DRIVE SHIFTING MECHANISM is protected against dirt, water, slush and ice. This enclosure, plus the shaft seal and linkage seal, also blocks transmission oil leakage into the motor and solenoid.

TWO-PIECE DRIVE HOUSING DESIGN permits 24 different solenoid positions which allows greater standardization—cuts fleet inventories. Nose housings are available in S.A.E. #2 and #3 mountings.

HEAVY-DUTY SOLENOID AND SWITCH provide positive pinion engagement and safely handle maximum starting current. Special seals keep out foreign material and allow increased contact life.



ELIMINATES SERIES-PARALLEL SWITCHES

SPRAG CLUTCH DRIVE operates with non-chamfered ring gear. Pinion indexes on spiral spline, positively engaging ring gear before power is switched on. Engagement of the pinion and ring gear is maintained during intermittent or sporadic engine firing.

HEAVY BRUSH INSPECTION PLATES resist damage from use and handling—are sealed to prevent leakage.

Engine manufacturers are invited to write directly to Delco-Remy for complete information and engineering assistance on the specific application of these new motors.

Fleet owners should specify this motor for new trucks through their truck dealers.

FROM THE HIGHWAY TO THE STARS

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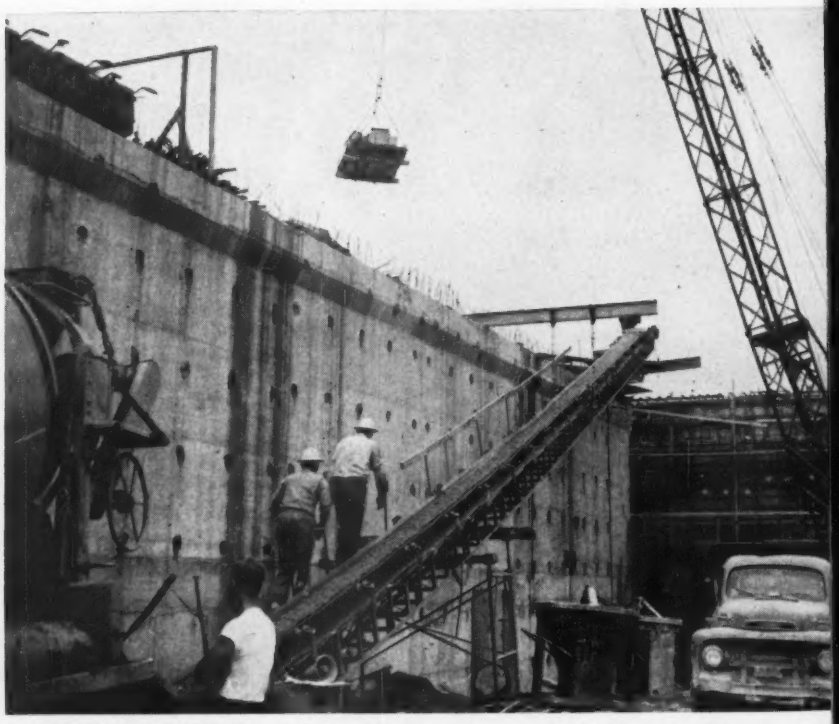
STEADY STREAM—Two trucks stand by to keep concrete moving along conveyors.



INCLINED CONVEYOR—Concrete begins trip up inclined conveyor that has a catwalk for workmen mounted on it. Cantilevered beams on the settling basin wall provide support.

Complex Conveyor System Places Concrete in Tight Quarters

A MAZE of belt conveyors carried concrete on a zigzag course from transit-mix trucks to pour areas during construction of a pumping station at Chicago's new water filtration plant.

More than 1,300 ft of conveyors were assembled on the site to move 50,000 yd of concrete required for the structure. Conveyors transported concrete over distances as great as 800 ft.

Lack of working space forced the general contractor, S. N. Nielsen Co. of Chicago, to abandon conventional pouring practices. The 200x600-ft pumping station, located inside a cofferdam area, is surrounded by four 300x700-ft settling basins. Only a narrow road that had to be shared with other contractors provided access for heavy equipment.

Pouring was also complicated by the structure's irregular shape. Six different structural slabs were poured at elevations ranging from 32 ft below ground level to 25 ft above. Between slabs, ramps and walls jut out at various angles. Despite these difficulties, no pour proved too intricate for the conveyors to handle. During one 14-hr pour, the conveyors placed 1,017 yd of concrete for a 33-in.-thick slab.

Imperial Flooring & Waterproofing Co., subcontractors, operated the conveyor system, which was designed by Oury Engineering Co. of Wheaton, Ill. The system consisted of a combination of nine conveyors that ranged in length from 60 to 200 ft.

The conveyors were seated on welded angle iron framework fabricated in 20-ft sections. Framework sections were easily assembled in lengths from 40 to 200 ft to cover the distance to any pour. Imperial estimates that the cost of one 200-ft-long conveyor unit, including framework, was $9,700.

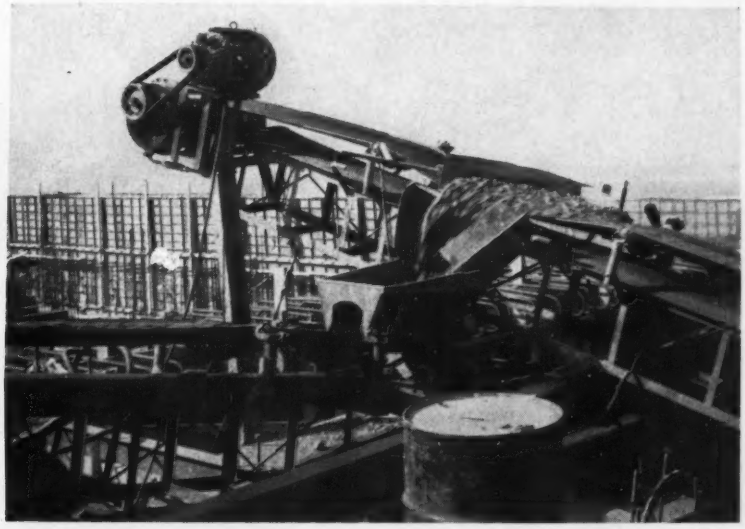
Some conveyors were mobile, others stationary. Wherever necessary, wheel frames that carried rubber tires mounted on 8-in.-dia hubs were bolted to the bottom chords of the framework. Most wheel frames were only a few feet high, but in one case the contractor attached 20-ft-high frames to permit construction of a 14-ft wall under a conveyor.

When the system was in operation, concrete was diverted from one moving conveyor to another by bracket-mounted plows. Fabricated from 10-gage steel sheets, the plows were shaped to conform to the trough of the 20-in.-wide endless conveyor belt. As the plows diverted concrete, they also re-mixed it to help prevent segregation.

Brackets made of 1-in. L-shaped steel rounds were welded at 5-ft centers to the top chord of the framework. They provided a quick way to attach and remove plows, which were constantly shuffled about to meet changing

continued on page 130

To pour a series of concrete slabs for a water filtration plant, this contractor depended on a network of stationary and mobile belt conveyor combinations to carry concrete as far as 800 ft.



DIVERSION— Inclined conveyor raises concrete to a height of 40 ft where a plow diverts it 90 deg into hopper at the start of 600-ft-long main-line conveyor.

ZIGZAG COURSE—Main-line conveyor in the background rests on 10-ft-high scaffolding towers erected 60-ft apart atop the completed settling basin. It delivers concrete to 180-ft-long transverse conveyor (top left) that extends across pour area.

6
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WORK AWAY...

WORRY-FREE

...NO ROLLER GREASING EVER!

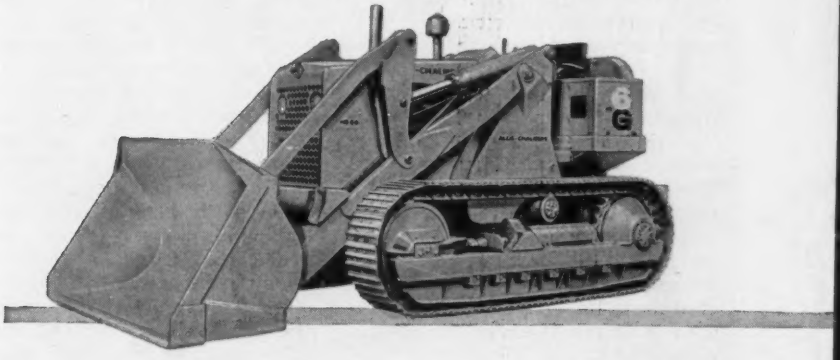
The 72-hp Allis-Chalmers HD-6G is the only 1½-yd tractor shovel with permanently lubricated tapered roller bearing truck wheels, idlers, support rollers—gives you certified protection . . . saves greasing time, materials and money.

The PERMA-SAFE truck wheels, idlers and support rollers in the HD-6G are lubricated at the factory . . . need no further greasing regardless of conditions. PERMA-SAFE design with Positive Seals and tapered roller bearings keep lubricants in . . . dirt and moisture out . . . *for life.*

In addition to timesaving, care-free track lube, the HD-6G also features super pry-out action, highest dumping clearance, fastest reverse and many more big tractor shovel advantages.

Your Allis-Chalmers construction machinery dealer will be glad to put an HD-6G through its paces on your toughest job. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

Now available in Persian Orange or Allis-Chalmers Yellow at no extra cost.



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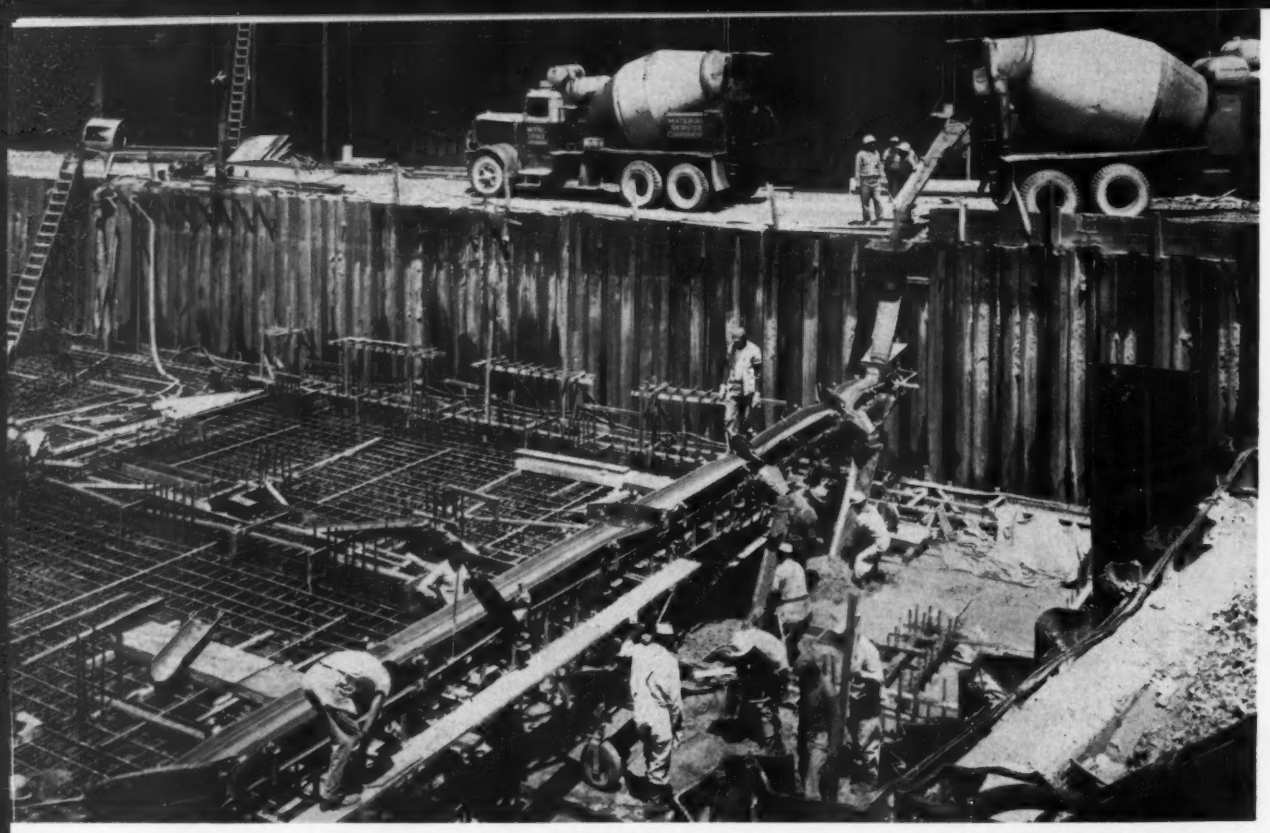


FIRST POUR—For this pour only, transit-mix trucks pull down a narrow roadway and dump concrete directly onto an 80-ft conveyor. Crews placed 100 yd an hr this way.

COMPLEX CONVEYOR SYSTEM . . . *continued from page 127*

pouring situations. Each plow also had a long handle so that a workman could reach it easily to swing it up and down on its bracket.

In most cases, swivel chutes were mounted at either side of the conveyor directly under the plows. Capable of rotating in a full circle, the chutes either linked two conveyors or connected a conveyor with a pour area.

The conveyors were equipped with 4-ply, 28-oz, ⅛-in.-thick vulcanized belts supplied by Goodrich Tire & Rubber, Goodall Rubber, and Boston Woven Hose. The belting rolled on idlers mounted between brackets attached to the top of the framework. Allis-Chalmers 7½, 10, and 15-hp epoxy-coated motors powered the belts. The contractor also used Falk shaft-mounted speed reducers.

The first pouring job called for placing a 4-ft-thick concrete mat 32 ft below ground level. For this pour only, transit-mix trucks pulled down the narrow road and dumped concrete directly into a chute that led to an 80-ft-long conveyor. After a section was poured, the conveyor was rolled on rubber tires along three runways formed by 2x8-ft framed plywood panels. Four men pushed the conveyor sideways down the length of the floor. With this setup, crews placed 100 yd of concrete an hr.

For the remaining floors, Imperial devised a system that worked like this:

First, transit-mix trucks dumped concrete onto the bottom of a 100-ft-long inclined conveyor. When concrete reached the top of the inclined conveyor, a plow diverted it 90 deg onto a 600-ft-long main-line conveyor that traversed the length of the pumping station. Then concrete was diverted 90 deg again from the mainline conveyor to two 180-ft-long transverse conveyors that extended across the width of the pour areas. Finally, the concrete was diverted from the transverse conveyors to shorter pouring conveyors that directed it to pour areas.

The first conveyor was inclined 17 deg and elevated the concrete to a height of 30 ft. The bottom of the conveyor rested on the ground. The top was suspended by two ⅜-in. cables from the end of a 10-in. I-beam that cantilevered over the wall of a completed settling basin. A railed walkway extended up one side of the conveyor for the convenience of workmen.

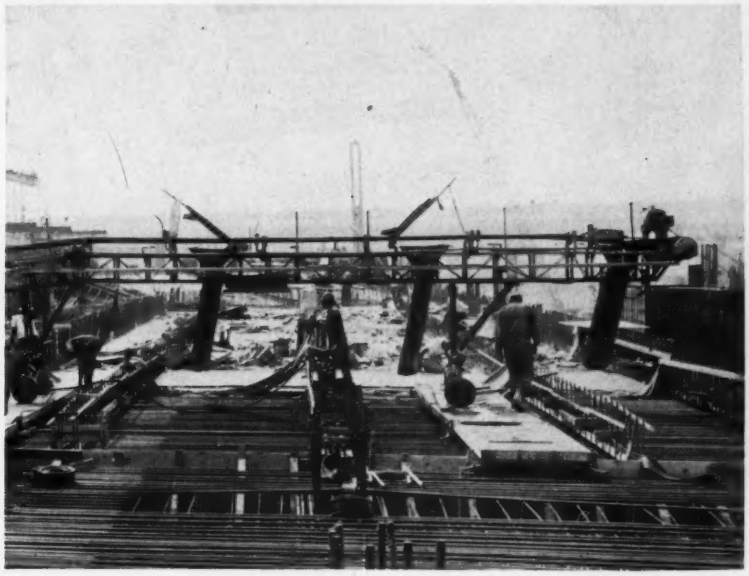
The 600-ft-long main-line conveyor consisted of three 200-ft-long conveyors seated on 10-ft-high tubular steel scaffolding towers. The towers were erected 60-ft apart along the top edge of the completed settling basin. About 90% of the concrete passed along this main-line conveyor.

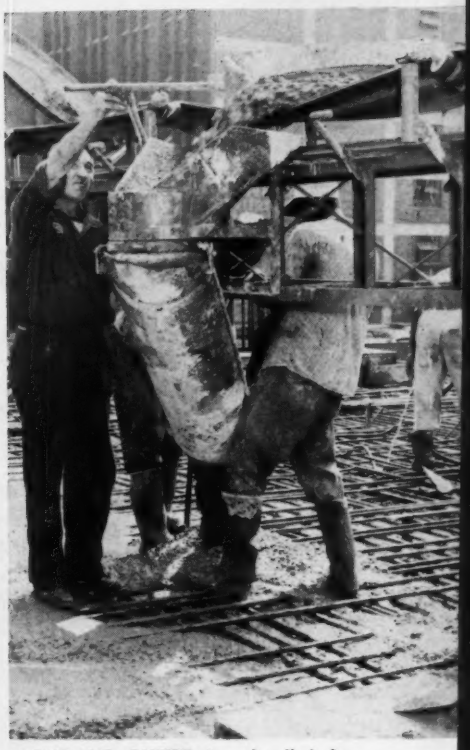
One end of each transverse conveyor was suspended from a trolley under the main-line conveyor. The bottom chord of the main-line conveyor framework doubled as a trolley track. The ends of the transverse conveyors rested under the trolley carriages on pivots that provided free radial movement. The remaining sections of the transverse conveyors were supported by wheel frames.

For some pours, additional mobile conveyors from 40 to 100 ft long were needed. Some of these conveyors also ran along a trolley under the transverse conveyors.

Sometimes the final deposit of concrete was handled by a 30-ft-long portable aluminum conveyor. This conveyor, which weighed

WHEEL FRAMES—Conveyor rolls on wheel frames bolted to bottom chord of angle iron framework. Tires mounted on 8-in.-dia hubs ride on runways formed by plywood panels.





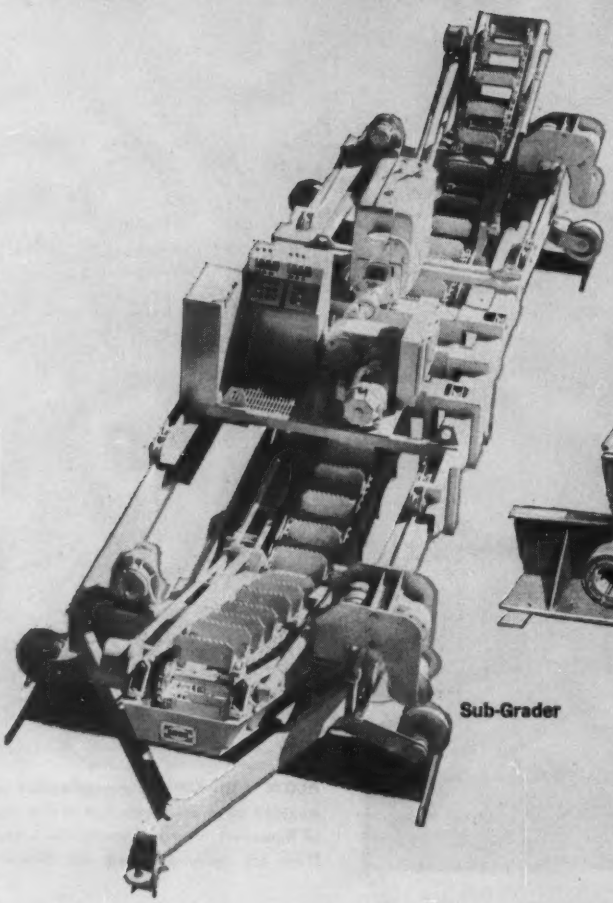
PLOW AND CHUTE—Long-handled plow mounted on bracket attached to top chord of framework diverts concrete into a chute. Plows are easily detached and relocated.

only 500 lb, was particularly effective in pouring uphill ramps over a barrier of reinforcing steel. A long chute carried concrete from one of the transverse conveyors to the aluminum conveyor, which was equipped with a discharge chute.

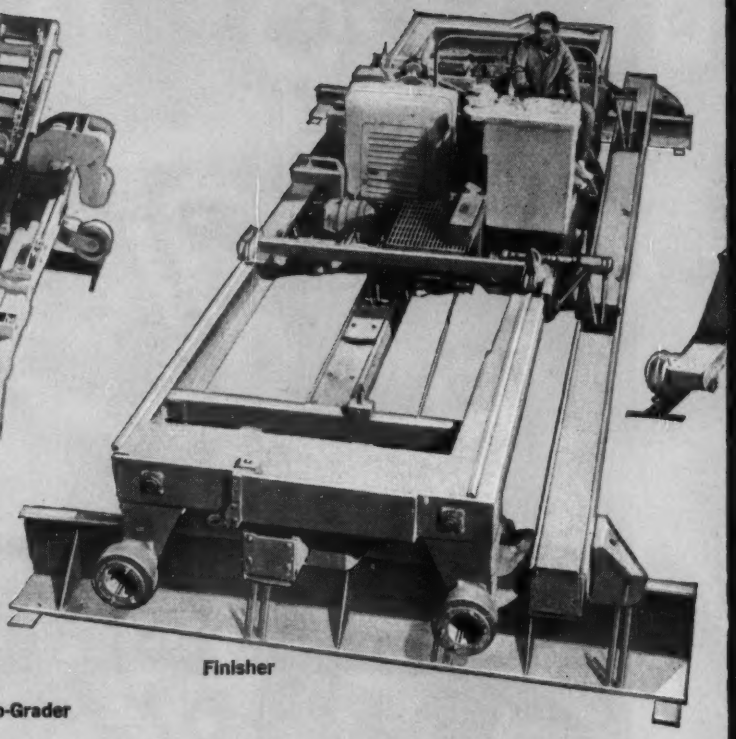
The contractor managed to keep a steady stream of concrete running along the conveyor system 90% of the time. Two transit-mix trucks were always in position to dump concrete into a hopper at the bottom of the inclined conveyor. As soon as one truck finished, the next one began. A Du Kane two-way intercom system linked workmen at the inclined conveyor with workmen at the pour areas.

J. Foster Oury, president of Imperial and Oury Engineers, was superintendent for the subcontractor. John Pratscher was superintendent for Nielsen. Arne L. Anderson was engineer in charge for the city of Chicago. The method of concrete placement had the approval of the Dept. of Public Works and its Bureau of Engineering, headed by Dick Van Gorp, chief engineer. Design was under the direction of George S. Salter, chief filtration engineer.

DIFFICULT POUR—A 30-ft-long portable aluminum pouring conveyor that weighs only 500 lb simplifies job of pouring a ramp over 3-ft-high dowel barrier of reinforcing steel.



Sub-Grader



Finisher

Sub-Grader—Revolutionary pushbutton power widening from 12′ to 28′. Automatic control system sets frame, conveyor and cutter bowl adjustment up to 4′. Easy-to-add sections readjust conveyor and cutter unit to 8′ to 12′. Entire range of depth adjustment made with synchronized electric power from 0″ to 12″. 14″ of height adjustment for form clearance at each end truck, independently or simultaneously. V-crown adjustment electrically controlled to within 3″. Parabolic crown hydraulically controlled. Electrically-powered travel speeds forward and reverse up to 40 f.p.m.

Finisher — Revolutionary pushbutton power widening from 12′ to 28′ without frame alteration in an infinite range of increments. Frame positions automatically without bolts or clamps. Screeds available in both crown bolt and quick adjustable types. Screed speeds infinitely variable between 40 and 105 strokes per minute, are controlled independently from traction speeds. Traction speeds infinitely variable between 8 and 80 f.p.m. through heavy-duty, high torque, variable frequency AC motors and gear reducers in each end truck. Power supplied by variable speed alternator driven by 4-cylinder engine.

Finisher Float — Pushbutton power widening from 12′ to 28′. Screed and pan-type float are quick adjustable for crown and operating position with synchronized electric power. Suspended oscillating screed is powered from Finisher through electric clutch and universal drive. Float is attached to Finisher and controlled through its own pushbutton controls mounted near the control panel of the Finisher.

Concrete Spreader—Automatic transverse blade delivers spreading action regardless of where concrete is placed on subgrade without segregation. Machine available in two standard widths—10′ to 15′ and 20′ to 25′. Vibratory paving attachment available to compact concrete simultaneously with spreading action. Rubber-tire transportation wheels available for spreader and vibratory attachment.

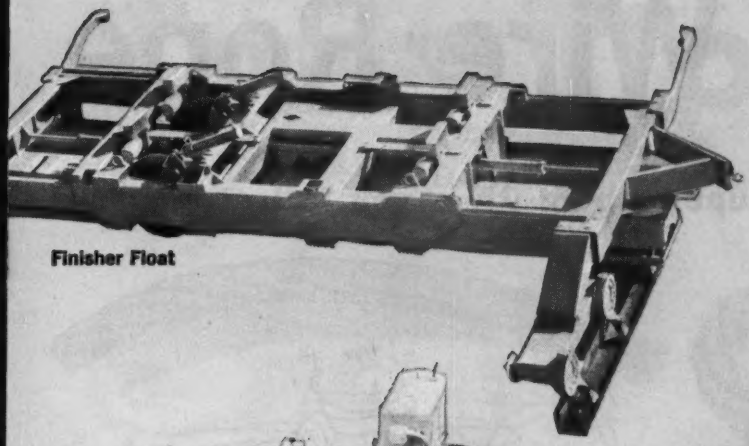
THE NEW LOOK IN CONCRETE PAVING:

MORE AUTOMATIC,

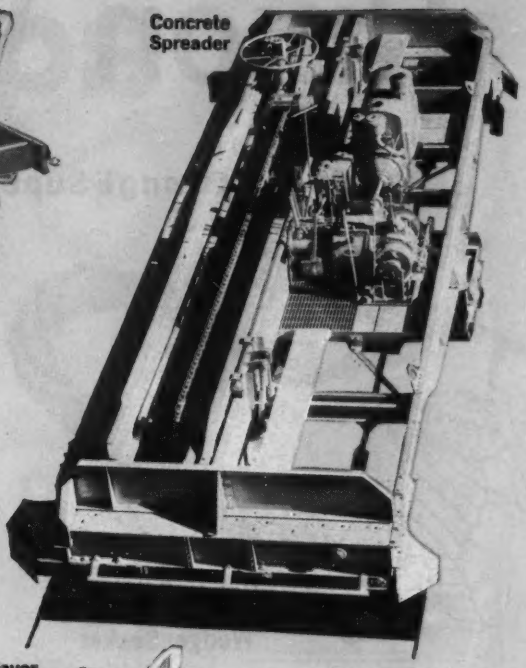
Here's concrete paving equipment that gives you flexibiltiy and automatic operation to a degree never before possible.

With these new Blaw-Knox machines in your paving train, the day is gone when a change in paving width meant hours of delay in resetting machines. These Blaw-Knox machines give you pushbutton, power widening right on the forms!

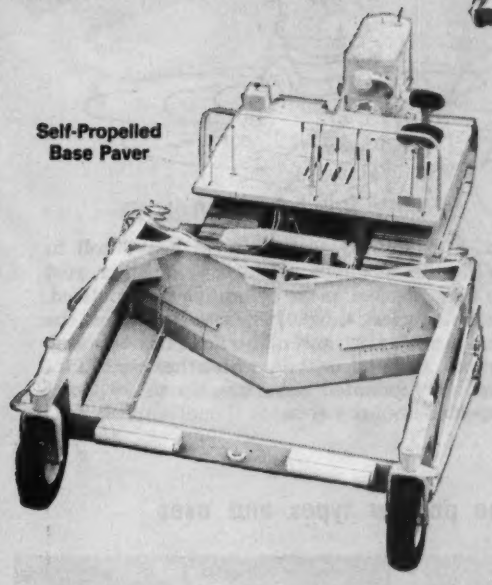
Check into the features of these new, automatic machines. They'll help you bid closer, work tighter and make more money the day you put them to work! Your Blaw-Knox distributor is the place to get started. Blaw-Knox Company, Construction Equipment Division, Mattoon, Illinois.



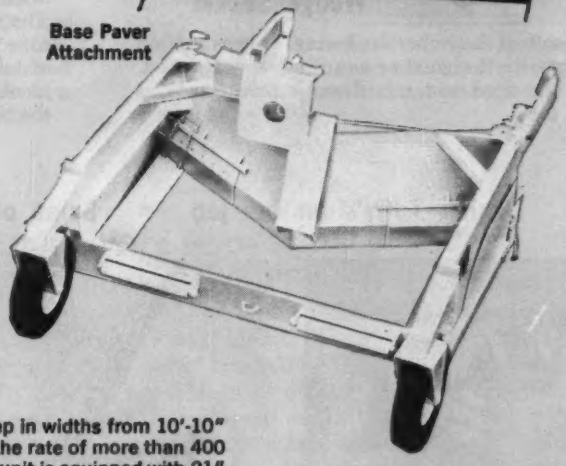
Finisher Float



Concrete Spreader



Self-Propelled Base Paver



Base Paver Attachment

Base Paver Attachment—Big capacity unit designed especially for use with standard tractors of sufficient power. New universal hitch makes attachment easy. Equipped with its own engine-driven oscillating screed, and mechanical crown adjustment. Spreads stone, slag, gravel, soil cement and plant mix aggregates 1" to 20" deep in widths from 10'-10" to 16'-0". Hopper lifts completely for travel.

Self-Propelled Base Paver—Big capacity unit spreads stone, slag, gravel, soil cement or plant mix aggregates 1" to 20" deep in widths from 10'-10" to 16'-0", at the rate of more than 400 t.p.h. Tractor unit is equipped with 21" wide crawler shoes for maximum traction and flotation on softest base. Equipped with high-speed oscillating screed, front wheel power steering, dual controls. Four forward and four reverse working speeds, one forward and reverse travel speed.

VERSATILE, RUGGED THAN EVER BEFORE!

BLAW-KNOX

Construction Equipment

Circle 133 on Reader Service Card

Union Wire Rope

Super strong! Super tough! Gives you fullest measure

Mangled in a Wedge Socket

Here's a result of improper socketing. It was caused by using a poorly designed or worn-out wedge socket. Failure at the dead end can damage other sections of the rope, too.

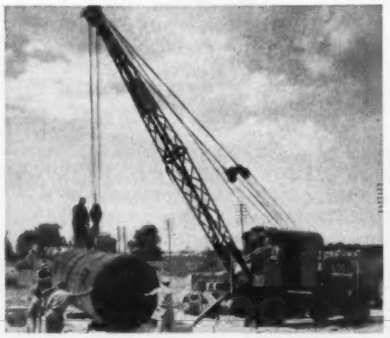
Rusty Road to Ruin

Rust—No. 1 enemy of steel—takes a heavy toll in wire rope life. An insidious, silent type of killer, rust often does irreparable damage before it's even noticed. The one-strand break shown here resulted when the rope was allowed to become rust-bound through lack of lubrication. Tests show that, with other conditions ideal, properly lubricated rope has up to 10 times the life expectancy of dry rope.

Union Tuffy's on the job • Some of the popular types and uses

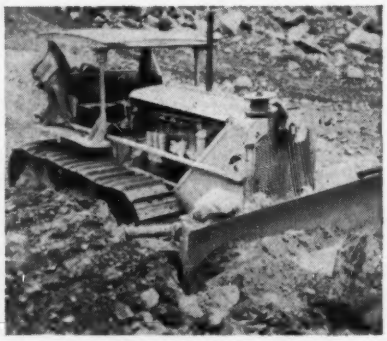
Tuffy Scraper Rope

Flexible enough to take sharp bends; stiff enough to resist looping and kinking when slack; highly resistant to the shock of load impact—that's Tuffy balanced construction. Mount a reel on your scraper—save wasting sound rope.



Tuffy Slings and Hoist Lines

Slings are a patented, 9-part machine-braided wire fabric that is next to impossible to knot or kink. Hoist lines have built-in strength, toughness, flexibility. Balanced—a top-performing team for handling every type of material. In addition to Tuffy, Union Wire Rope furnishes a complete line of slings.



Tuffy Dozer Rope

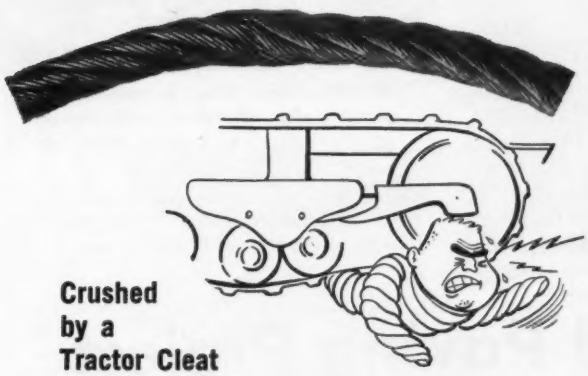
Mounts right on your dozer in a 150′ reel. When rope shows wear, just feed through enough to replace the damaged part. Saves rope, gives you a bonus of extra service. Also available in 300′ and 500′ reels.

Union's Field Organization Will Help Select the exact rope you need from the Tuffy family of wire rope and slings tailored to special needs and from more than 1600 standard constructions. All have the balanced strength, toughness and flexibility that add up to long, trouble-free service. If your rope need is new, even more specialized, you are invited to bring your case to our research laboratory. That's the way many of today's special purpose constructions were developed. No obligation. Call your Union Distributor—listed in phone book Yellow Pages.

Tuffy Tips

New steels are born at Armco

of service life when properly used . . . not abused . . .

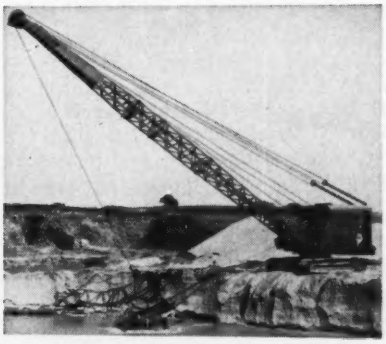


Crushed by a Tractor Cleat

The Sunday punch for this piece of wire rope was delivered by a tractor cleat—just one of many crushing injuries caused by rope being run over or banged into by hard, sharp objects. Even the toughest wire rope is no match for this kind of mistreatment.

After a Suicide Jump

This rope jumped out of sheave and was soon destroyed by pulling around the shaft. Actually, it was a case of sudden slack which threw the rope out of the sheave.

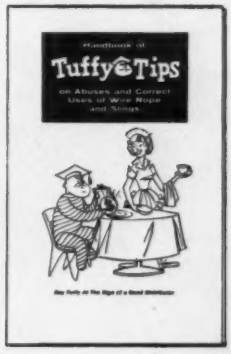


Tuffy Dragline Rope

High abrasive resistance and super flexibility. Gives long service, dependable action in handling any material—wet or dry dirt, sand, gravel, rock, minerals. Rides smoothly on grooves—hugs the drum when casting for full load.

Union Wire Rope Handbook of TUFFY TIPS . . . Free!

The "Tuffy Tips" shown here are quoted right out of Union's handbook. In it there are dozens of other priceless hints on the correct use of wire rope. The common abuses and how to avoid them. How to save costly injuries. Maintenance tips. The proper fittings and how to apply them. Recommended sizes. Many other facts and suggestions that will cut down your rope costs and help you get out of wire rope the full service we build into it. No charge. Write Union Wire Rope, Armco Steel Corporation, 2270 Manchester Ave., Kansas City 26, Missouri.



1-61

ARMCO Union Wire Rope

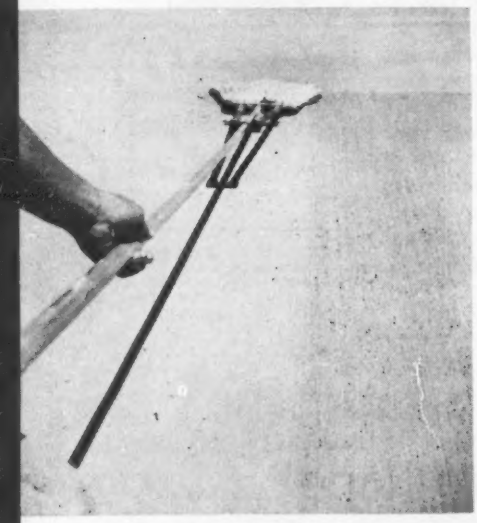
Circle 135 *on Reader Service Card*

SCREED—Top of screed is converted to a platform after adaptation permits removal of vibrators. Here, workmen make joint.

SPECIAL RIG—Workman applies iron oxide between longitudinal channels to make the 3-in.-wide center line called for in specs.

Gimmicks Speed Paving Project

A SIMPLE BUT EFFECTIVE shop-built rig helped a contractor meet unusual paving specifications for the construction of Interstate-20 through Georgia. The specs required that the contractor apply iron oxide during the paving operation to create a permanent black center line. Georgia's success with iron oxide, which penetrates plastic concrete to a minimum depth of ⅛ in., indicates that more states may adopt the procedure.



NON-SKID SURFACE—Two housebrooms attached to long handle make grooves in wet concrete to create non-skid surface.

To apply iron oxide, Wright Construction Co. of Columbus, Ga., devised a welded-steel, four-wheel, two-axle frame that rode along the forms behind the final finisher. The rig was easily pushed ahead by hand, and it could be adjusted to straddle the width of the pavement, which was 24 ft in this case.

Axles for the rig were housed between two double 6-in. channels. Located longitudinally through the center of the frame were two other 6-in. channels with their webs back-to-back 3 in. apart. The space between the two longitudinal channels was as wide as the center line of the highway.

Planks laid atop the supporting members of the frame served as platforms for workmen and held containers of iron oxide. Two men with trowels scraped up thin layers of wet concrete and mixed it with the chemical. Then the mixture was placed between the channels.

Several other paving tricks also expedited Wright's job. To prevent the development of concrete honeycombs along the form lines —a nagging problem on many paving jobs — Wright welded small steel pins to the bottom of the vibratory screed. The screed, which followed the first finishing machine, vibrated all the concrete except for the few inches next to the forms. Common practice calls for mounting two additional vibrators atop the screed at each end to overcome this problem.

Wright was able to eliminate the additional vibrators by welding the small pins under the ends of the screed. The pin stuck into the concrete far enough to vibrate and consolidate it alongside the forms.

Because extra vibrators were not needed, the contractor could erect a platform across the top of the screed. Crew members worked from the platform to insert and remove a ½-in. steel plate that was used to make transverse joints.

Once the steel plate was removed, workmen inserted a length of nylon rope into the groove to protect it from the curing compound. After applying the curing compound, workmen jerked the rope out of the groove.

Job specs also required that the contractor make ⅛-in.-deep transverse grooves in the pavement to create a non-skid surface. One workman standing outside the forms made these grooves with ease. He used two housebrooms attached to the end of a 12-ft-long hollow steel rod.

Two Koehring Twinbatch pavers placed all the concrete on the job. Wright held a $6-million contract to construction 10 mi of the Interstate route near Atlanta. Bill Blount was superintendent for Wright. Mark Johnson was resident engineer for Georgia.

Here's how TOURNATRACTOR® puts extra dollars in your pocket!

Handles more tractor jobs over a wider area . . . faster

Because of its rubber-tired speed . . . power . . . and mobility . . . LeTourneau-Westinghouse Tournatractor gets around the job fast . . . completes widely-separated assignments at low cost. You need fewer tractors on your spread when you work a fast-stepping Tournatractor . . . and the saving is yours.

We will be happy to give you the full story on 218-hp Tournatractor, and will arrange a demonstration so you can see the profit-possibilities in this fast, rubber-tired, heavy-duty tractor. Remember, you now have a choice of Tournatractors . . . electric control or hydraulic blade control . . . speeds to 18.5 mph.

FILLS IN WASHES
BACKFILLS CULVERTS
SPREADS FILL
Rubber-tired Tournatractor is never more than a few minutes from its next assignment . . . anywhere on your project. This drive-anywhere mobility often permits you to eliminate 2 or more crawler tractors, reduce operating costs substantially.
PULLS COMPACTORS
CLEANS-UP HAUL ROAD
PUSH-LOADS SCRAPERS
CT-2345-DC-1

LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

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LW

LETOURNEAU WESTINGHOUSE

V POWER C 'PULL* gives you these production advantages:

TOP POWER/WT RATIO: The LeTourneau-Westinghouse C Tournapull® is powered by the GM 8V-71 diesel engine producing 290 hp. Combined with "C's" light weight, each "horse" moves only 304 lbs of total loaded weight. That's almost 93 pounds less than the average for all single-engine scrapers in this class. You accelerate 20% faster, complete cycles in less time.

EASIER OPERATION: Exclusive LW electric-control system gives you positive, *instant-reponse* control of steer, tailgate, apron, and bowl lift. It's the easiest-to-operate, easiest-to-maintain system of all... and 100% weather-proof.

FASTER LOADING: Fullpak® scraper has been proven to load a *greater* percentage of its heaped capacity than any other unit on the market. Low-angle loading, with wide entry for dirt... 20 yd heaped, 14 yd struck.

GREATER SAFETY: C'Pull gives you biggest brakes in the industry (3,764 sq in.), excellent visibility, and electric power steer that is never hampered by the operation of any other controls.

LOW OPERATING COSTS: You save money *every work day* because of "C's" simple, rugged design, easy accessibility of component parts, minimum of lubrication points, and low requirements for fuel, cable, oil, and tires.

More reasons why C 'Pull moves more dirt at less cost:

LW Power-Transfer Differential — automatically transfers power from slipping drive wheel to wheel on firmer footing, keeps production high on soft, slippery terrain, on slopes and curves.

Power saving features — special radiator fan needs 7 hp less than other types. Drive train is short-coupled, runs on anti-friction bearings. Electric controls use power *only* when operating.

More maneuverability — electric kingpin power steer can U-turn C Tournapull in less than its own length, for fast, easy maneuvering in tight quarters, narrow haul roads.

Interchangeability — convert from 20-yd scraper to 22-ton rear-dump hauler in a matter of hours... C prime-mover earns bigger profits.

Unequalled experience — because of the experience gained in designing, engineering and building C Tournapulls over the past 20 years, today's V-Power C 'Pull is the *most up-to-date, fully job-proved scraper on the market!*

Let us show you the V-Power C 'Pull in action. See for yourself how it can cut your costs, help you make bigger profits. See us soon.

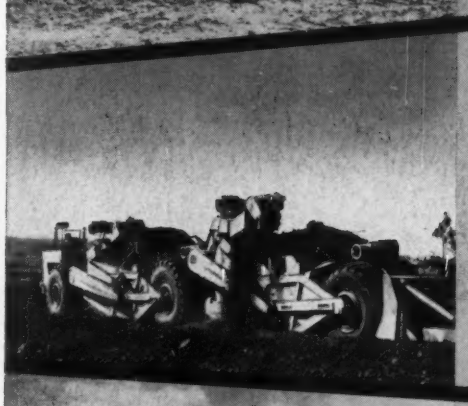
There's a 'Pull to fit every job

LW Speedpull®

For top-performance on long-haul assignments. 276 hp, 20-yd heaped capacity, 37.7-mph speeds, exclusive Hydrair® suspension, best power-to-weight ratio, many other LW advantages.

LW V-Power B 'Pull

Puts more production, new profits into big-scraper dirt-moving with: More power... 430 hp. New speed... up to 28.3 mph. New capacity... 23 yds struck, 29 yds heaped... 58 yds in tandem.



LW Tandems

With LW electric-control system you can use two scrapers behind *any* 'Pull prime-mover... double your load capacity at only 30% extra cost! Plug-in jacks, and simple swivel hitch let you add or take off second scraper in a matter of minutes.

LW D Tournapull

Money-maker on *any* size job with standard 9-yd LW scraper ... or with 10-yd Hancock elevating scraper (shown). 143 hp ... choice of constant-mesh or torque-converter transmission ... speeds up to 30 mph.

*Trademark CP-2370-DC-2

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

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Where quality is a habit

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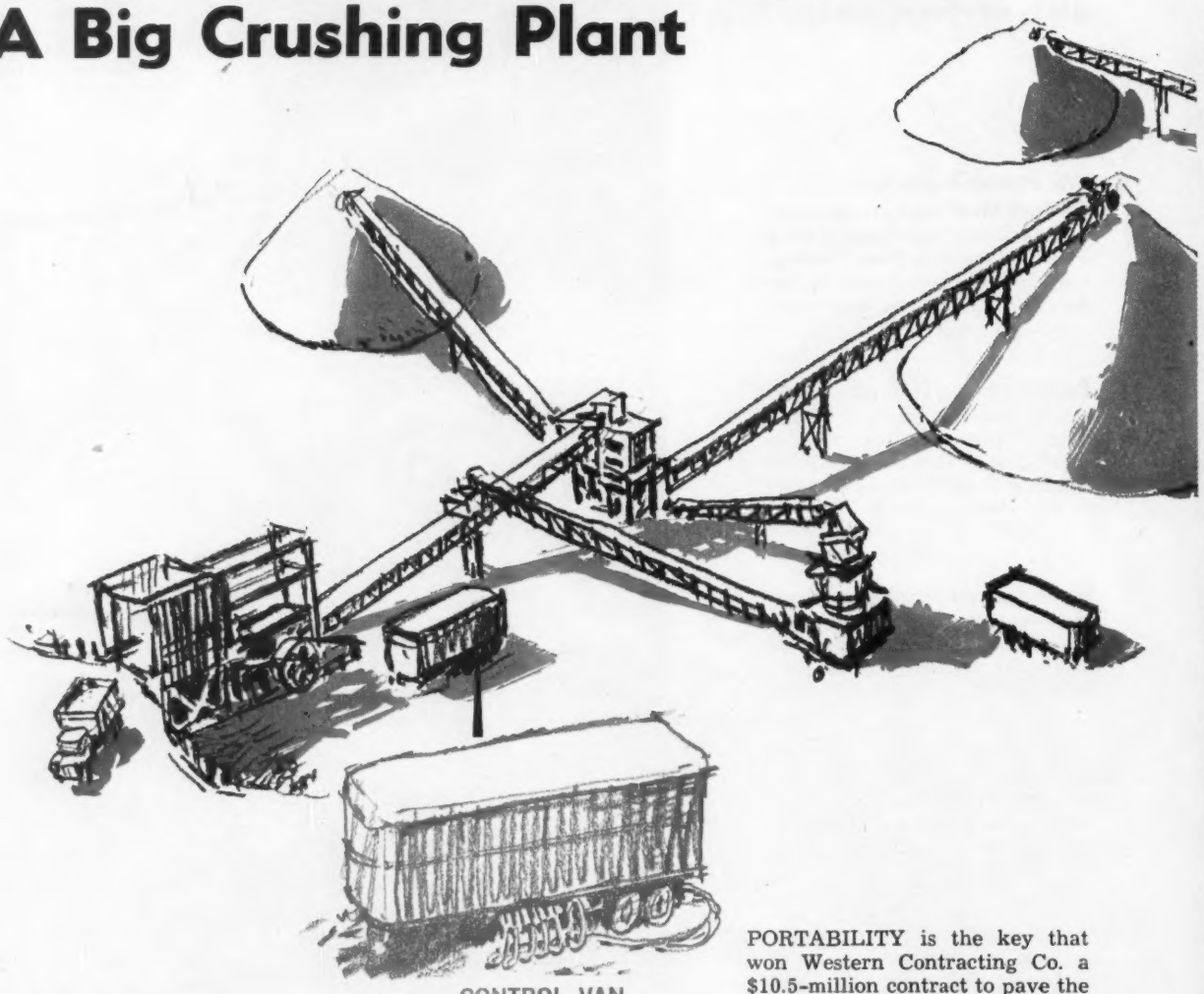
Small Units Combined to Form A Big Crushing Plant



CONTROL VAN

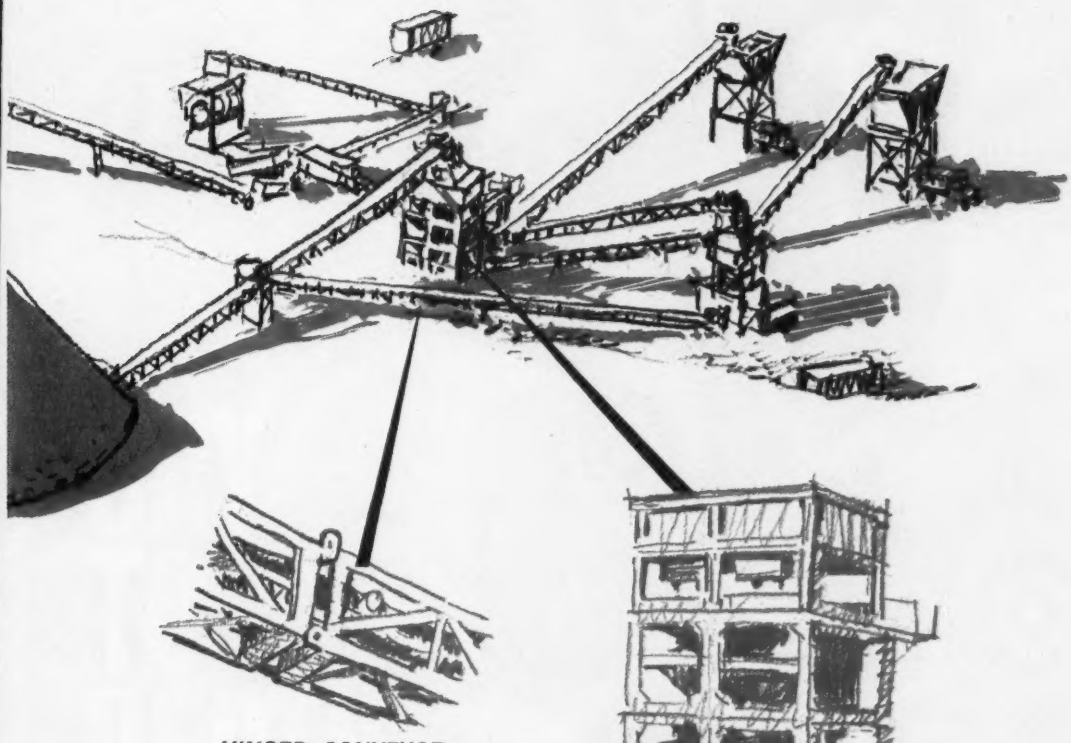
Interchangeable units mounted on standard frames that are based on a basic module combine to make this crushing plant big enough to back up a large-scale paving operation. Each component, including hinged conveyors and control vans containing all circuit wiring, can be assembled quickly after reaching the site by road.

PORTABILITY is the key that won Western Contracting Co. a $10.5-million contract to pave the apron and taxiways at Washington's Dulles International Airport.

It came as a surprise when the Sioux City outfit walked off with the award because a competitor already was well-established at the site with an elaborate concrete plant for paving runways under an earlier contract. (*CM&E, Oct. '59, p. 120*).

How did Western manage to bid low? Its policy of making all plant components portable was the most important single factor. It enabled Western to assemble, from units scattered all over the country, a high-production plant without investing in a permanent installation.

Much of Western's batch plant



HINGED CONVEYOR

FRAME

and crushing equipment is built in its own shops. To put together a high-capacity plant, Western combines small units instead of depending on one large plant. Every component is small enough to be handled on a trailer truck and, wherever possible, interchangeable units are chosen. To standardize its plants, Western mounts and installs components on steel frames built to the dimensions of a basic module.

The Dulles Airport job calls for placing 220,000 cu yd of concrete in the terminal area of the airport. About 60% of this total is going into a 600x4,500-ft apron in the center of this area. The remainder will form several 75-ft-wide taxiways and an 8-in.-thick roadway.

Western lost no time in setting up a plant well suited to the requirements of the job. From a completed air base in Ohio, the contractor brought in an automatic, four-stop batch plant with separate batchers for cement, sand, and two sizes of stone. With this 750-yd-per-hr plant it supplies two conventional paving trains, each headed by three 34E pavers.

Western also opened a quarry at the site and assembled a 600-tph crushing plant. It's here at the crushing plant that Western's stress on portability shows to most advantage. The system is based on a basic frame size, or module, for all bins, crushers, screens and other plant units. The basic unit consists of a 10x10x18-ft frame made up of heavy 14-in. WF beams.

Western stacks these frames alongside of and on top of each other to provide support for plant equipment. The design of the module unit is such that some combination of frames will meet the demands of just about any setup. Aside from the addition of internal bracing and—less frequently—a notch in a frame member, little alteration is needed.

Another proof of Western's concern with portability is in the construction of the conveyors, which they assembled themselves. Each is a standard 60-ft-long unit hinged in the middle so that it can jack-knife together. Each conveyor section—including rollers and belt—folds to half its length so that it can be loaded onto a trailer for moves from site to site.

continued on page 144

Bethlehem can make fast delivery of new high-strength bolts

Bethlehem stocks the new high-strength bolts for structural steel joints (large head, short thread) in all popular sizes—⅝ to 1⅛-in. diameters, inclusive, in usual lengths, available now. Available soon—1¼-in. diameter, in usual lengths.

- We will continue to maintain complete stocks of ⅞ to 1¼-in. diameter high-strength bolts in all lengths with regular heads and A.S.A. Standard thread lengths.
- Hardened washers, made to both the new and old standards, are available in all types and sizes for quick shipment.
- Our new booklet 563A, "High-Strength Bolting for Structural Joints," contains the latest specifications, and complete information. Get your copy from the local Bethlehem office, or write to us at Bethlehem, Pa.

Steel

for Strength
. . . Economy
. . . Versatility

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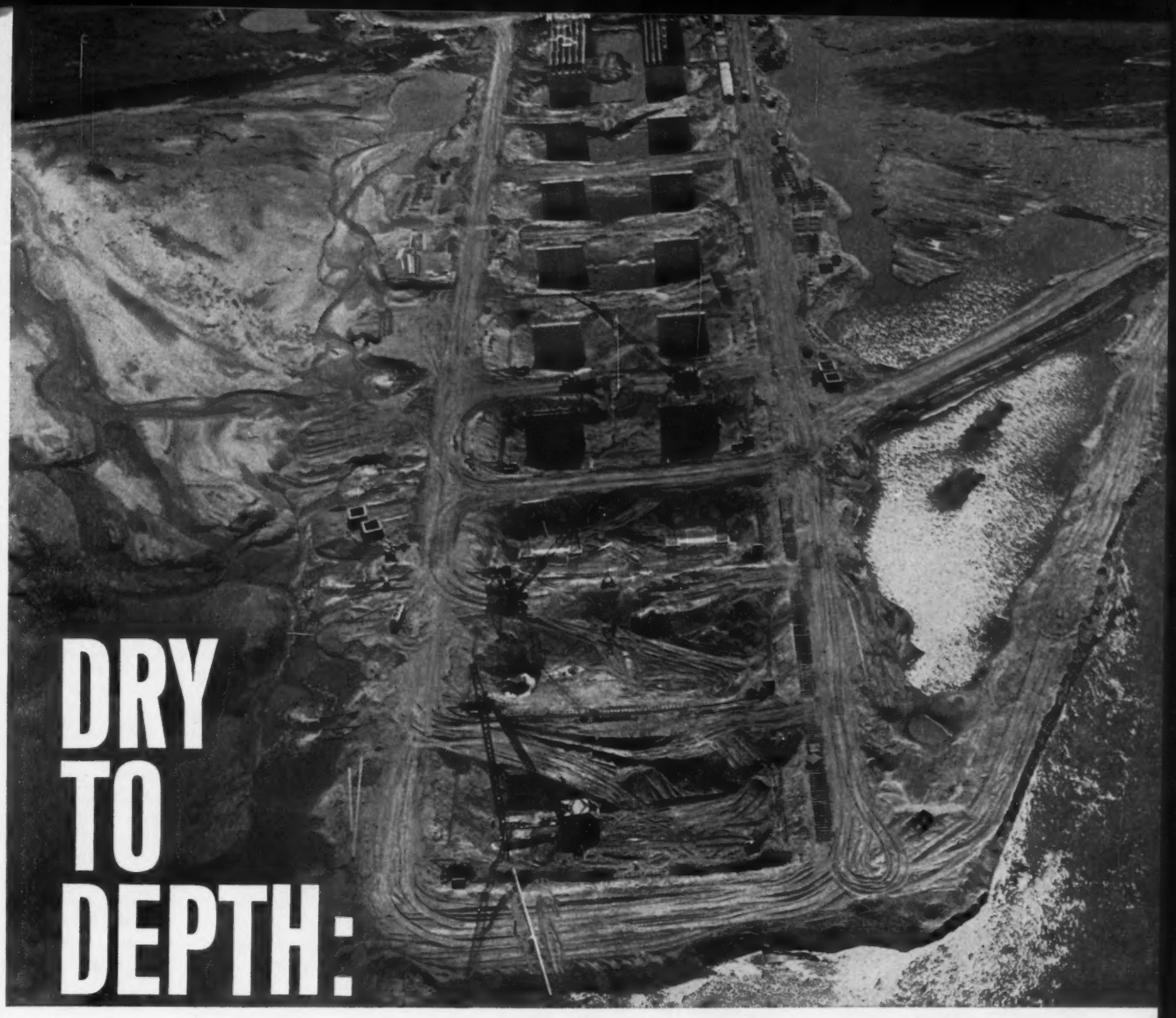

Stang pumps 35,000 gpm of water to dewater in the treacherous Platte River

Bridge jobs are often dewatering problems and the project pictured above is a case in point. Bridging the Platte River, the twin lane 60′ wide, 1500′ long crossing required 26 piers. The problem of quickly dewatering the sandy site of these piers 18′ below water table without disrupting the planned progress of the contractor was neatly solved by the Stang Corporation. After doing a complete analysis of the project requirements, Stang engineers designed a unique "leapfrog" wellpoint operation whereby five independent systems were placed around the first group of piers and then individually moved up as each successive pier was completed—a fast, efficient and effective dewatering job that let the contractor set up the project on a production basis. Solutions to dewatering problems such as this are the specialty of Stang; through proper engineering analysis and design Stang professionals continually save contractors time, money and trouble. Give them an opportunity to help you on your next dewatering problem. Contact any of their seven national depots and there'll be a man on the job in the morning.

JOHN W.

STANG

CORPORATION • 8221 ATLANTIC AVE., BELL, CALIFORNIA
ENGINEERS & MANUFACTURERS OF DEWATERING EQUIPMENT, WELLPOINTS & PUMPING SYSTEMS
DEWATERING—PLANNING—EQUIPMENT—SERVICE
Omaha • Tacoma • Mobile • Tulsa • Minneapolis • St. Petersburg

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BIG CRUSHING PLANT...

continued

To facilitate setting up plant equipment, Western houses all electrical circuit outlets and switch boards in trailer vans. On this job, four such trailers provide central control of all units. Hooking the units into the circuit is as easy as plugging a lamp into a wall socket. The complex wiring in each circuit is done once and only once.

The crushing plant is located about 3½ mi from the terminal area in a quarry that supplies hard trap rock. A 4½-yd Manitowoc 4500 shovel loads shot rock into 35-ton Euclid rear dumps for delivery to a 56x72-in. Traylor jaw crusher that handles primary reduction.

A 48-in. conveyor carries the broken-down rock to a primary screening plant consisting of two 5x12-ft Tyrock screens. Oversize material goes back to a 7-ft Nordberg cone crusher for secondary reduction. Sizes retained on the screen go to a 6,250-ton surge pile that feeds the rest of the plant. Sizes passing the ¼-in. screen build up another stockpile for base course material.

Western keeps the surge pile high to prevent production stoppages during breakdowns of the primary stage equipment. The surge pile holds sizes varying from a maximum of 2 in. down to No. 4 screenings. A 36-in. tunnel conveyor feeds material from the surge pile to a secondary screening plant consisting of a set of 6x14-ft double-deck Simplicity screens. A 5½-ft cone crusher handles tertiary reduction of oversize material.

The secondary screening plant breaks down the end product into two sizes of stone for concrete aggregate. Conveyors feed one bin with 2-in. material and another bin with 1-in. stone. Material passing the screens undergoes further processing by two contractor-built classifiers and a Marcy rod mill and emerges at the final stage as sand.

Trucks load sand and stone at the crushing plant and deliver them to stockpiles at the batch plant. The plant includes three aggregate batchers with 70-ton bins. Johnson batchers automatically weigh four batches at a time and record each on graph paper. Two cement batchers with 600-bbl bins each dole out two batches of cement at a time. Two 1,000-bbl silos, equipped with screw auguers for filling with truck-delivered cement, feed each batcher by means of a bucket-type elevator. Eight oil drums filled with concrete serve as supporting pillars beneath each of the four cement silos.

Shop-built 30-in. conveyors feed the bins of the aggregate batchers from a row of stockpiles. Charging the hoppers that feed the conveyors are two Michigan tractor shovels, a Model 375A with a 6-yd bucket handling stone and a Model 175A with a 2¾-yd bucket handling sand. Also on hand is a Northwest crawler crane with a 2½-yd clamshell.

A fleet of 30 International batch trucks supplies the paving trains. They move through the batch plant in less than 1 min per trip, picking up a load from each batcher at the flick of a button. The truck driver merely leans out of his cab and presses a button mounted on an arm jutting from the bin's steel frame to load his truck at each station. He positions the truck by lining up a mark on the cab with the arm.

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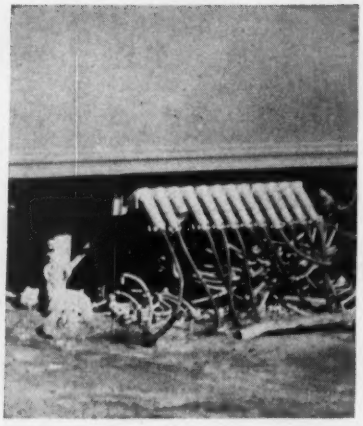
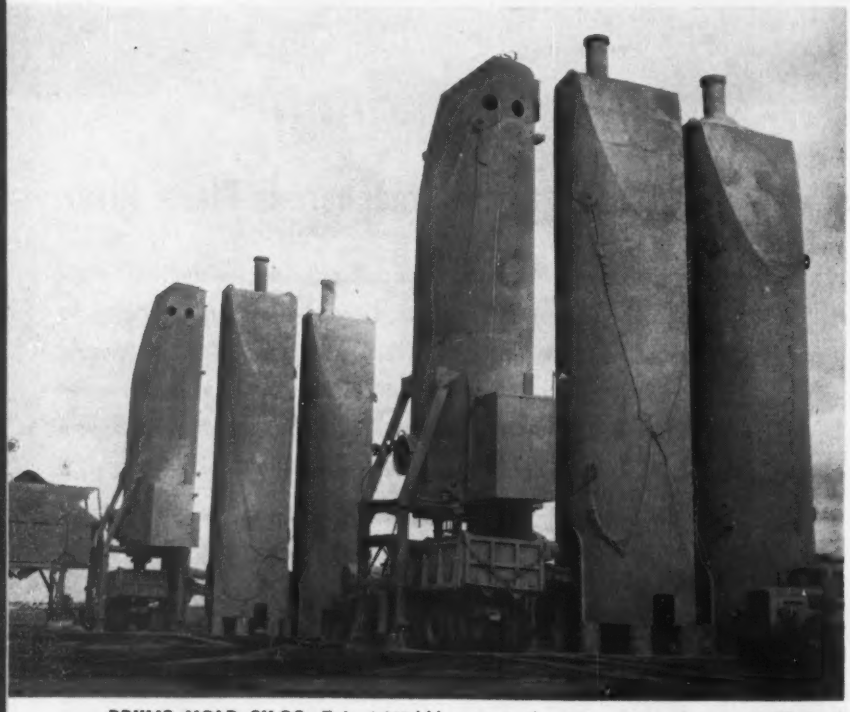
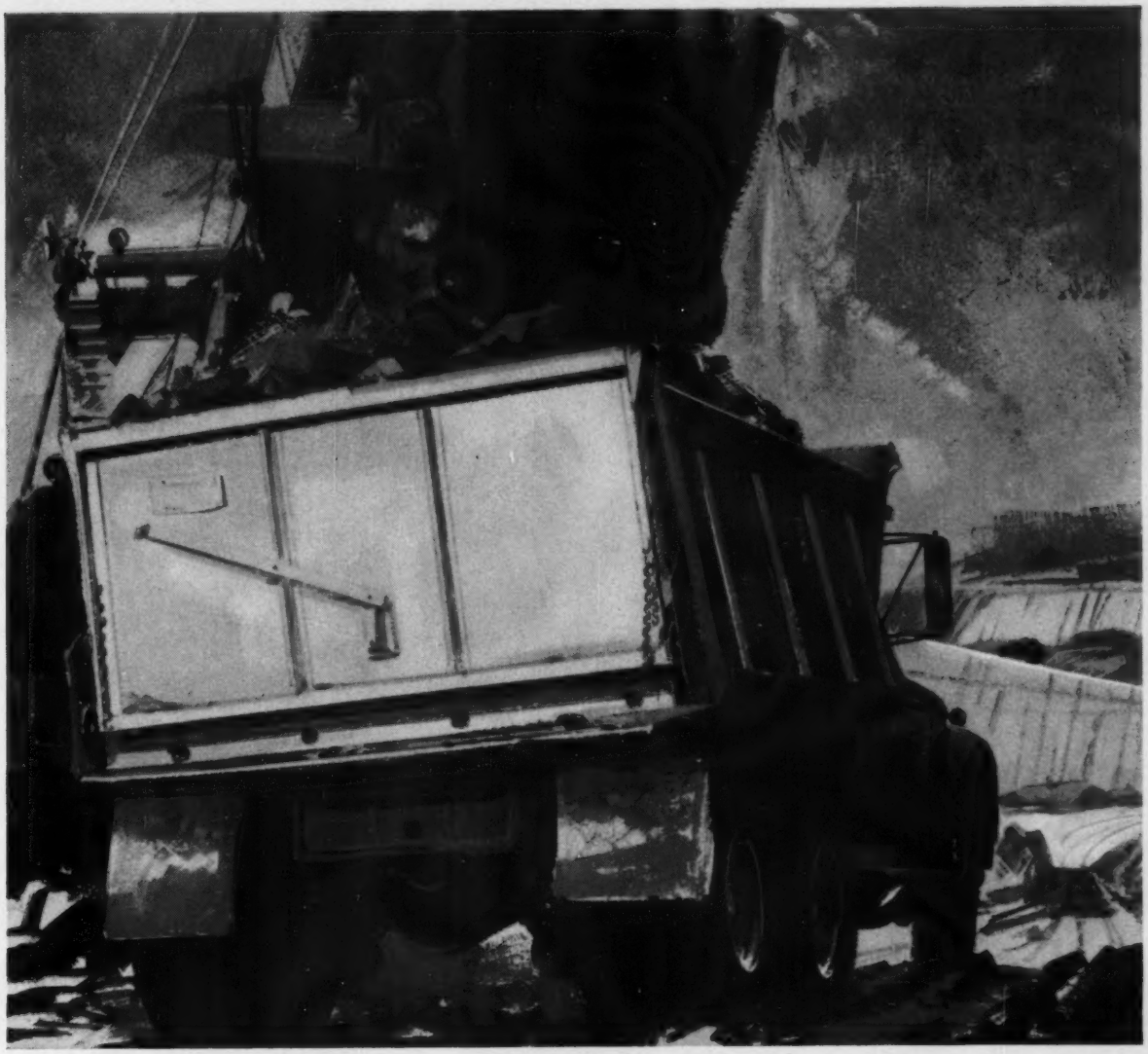


VAN HOUSES CONTROL—Superintendent George Spencer operates plant at switchboard inside trailer. The crushing plant units plug into circuit at outlets mounted outside trailer.



DRUMS HOLD SILOS—Twin 1,000-bbl cement silos set on top of concrete-filled oil drums feed each of two automatic batchers at Western's centrally-located batch plant.

Better products, *faster*, from your Bower Distributor:

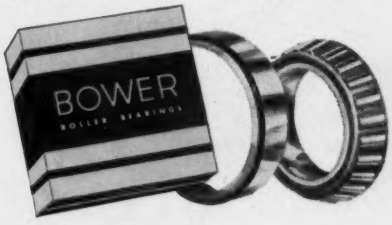


OOF!

It takes a mighty good roller bearing to stand up under this kind of punishment day after day after day. That's why Bower Bearings are *engineered* to take the shock out of rock (or anything you're loading!), and give you equally dependable service over-the-road or off-the-road.

The exclusive Spher-O-Honed design of *tapered* Bower Roller Bearings provides super-finishes of the ground surfaces of raceways—results in reduced friction, longer service life. *Straight* Bower Roller Bearings feature two-lip construction for improved roller alignment, greater rigidity.

So for bearing replacement, be sure to specify *Bower Roller Bearings*. Your Bower Distributor can give you real hurry-up service on all your bearing needs. Call him today!



BOWER ROLLER BEARINGS

FEDERAL-MOGUL SERVICE

DIVISION OF FEDERAL-MOGUL-BOWER BEARINGS, INC. • DETROIT 13, MICH.

BEARING BOWER ROLLER BEARINGS SERVICE

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AMSCO helps you handle more tons per dollar

SHOULD YOU BUY REPLACEMENT PARTS FROM THE COMPANY THAT BUILT YOUR CRUSHER?

Star Rock Products did, and increased their tonnage 75%

At Star Rock Products Co., Anaheim, California, crusher jaw plates previously used were giving only about 6 months' service. Large rocks often caused the jaw plates to "give" enough so the rocks wouldn't crush. Jams and costly delays resulted. Plates would often flow and crack.

Amsco and the crusher manufacturer developed a new design, using 2% chrome (Amsco MY) alloy. After 6 months' service, the plates were in excellent condition. Jams and delays have been eliminated and tonnage handled increased 75%.

Cases like this are not unusual, because it's often difficult to resist an "experiment". After one experiment, though, most producers rediscover that the "factory part" delivers the goods.

Amsco and leading crusher manufacturers work together to assure you of maximum value in parts such as hammers, rolls, jaw plates, mantles and concaves. Avoid experiments—buy maximum value through your crusher manufacturer or his dealer.

AMSCO

AMERICAN MANGANESE STEEL DIVISION • CHICAGO HEIGHTS, ILL.
OTHER PLANTS IN: Denver • Los Angeles
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AMERICAN Brake Shoe COMPANY

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BIG CRUSHING PLANT . . .

continued from page 144

Western started paving in September after waiting several months for the work area to be opened to them. Averaging about 4,500 yd of concrete put in place per day, the contractor completed most of the paving before cold weather set in. Peak daily production to date was 5,700 yd, or about 1 mi of 24-ft-wide, 15-in.-thick pavement.

Three Koehring 34E pavers head each of the paving trains. They place concrete to the full 15-in. depth of the slab because there is no wire reinforcing to separate it into two courses. Behind the pavers comes a Blaw-Knox spreader with Maginnis vibrators mounted at the rear. A Jaeger transverse finisher and a Heltzel finisher-float follow.

Production would be much higher if a paving pattern or sequence could be set up to eliminate the numerous moves now necessary. But the late availability of the apron area delayed installation of utility lines, which in turn reduced the length of paving runs. As a result, Western moves its paving trains as often as three times in a single day. The moves might more accurately be called hops, because they seldom exceed a few hundred yards. The pavers, of course, traverse the distance under their own steam. A 45-ton American truck crane shuttles the spreaders and finishers from point to point.

PAVERS ON THE MOVE—The three Koehring 34E pavers heading each of Western's two pavnig trains change locations as often as twice a day because paving runs are short.

Men on the Job

In charge for Western is Project Manager Gene Williams. Project engineer is C. A. Nelson. Paving superintendent is Guy Pinkman; superintendent in charge of placing the subbase is George Chamley. In charge of the quarry and crushing plant is Superintendent George Spencer.

In over-all charge for the Federal Aviation Agency, the government office handling construction of the airport, is Ben Hoxie. Consulting engineers are Ammann & Whitney of New York. Representing them on the job is Resident Engineer Joe Gordon.

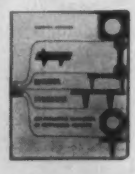
To the contractor considering concrete precasting:

LET FMC HELP YOU

- WITH FORMS FOR ON-THE-JOB CASTING
- WITH FORMS FOR YOUR CENTRAL PRESTRESSED YARD
- WITH CUSTOM FORMS FOR SPECIAL PRODUCT SHAPES
- WITH FORMS THAT KEEP PRODUCTION COSTS DOWN
- WITH FORMS FOR CASTINGS OF UNIFORM ACCURACY

Successful casting operations depend on forms that will produce uniform accurate members that consistently meet specifications. Get started right—with FMC Form-Crete steel casting forms. FMC offers a broad line of quality forms backed up by years of valuable form design experience. FMC's capable engineering force and field engineers are at your disposal for facts and figures on form design. Before you bid—contact FMC. Get the benefit of experienced engineering, superior service and quality Form-Crete forms.

Send for your free copy of the #400 Form-Crete Catalog. Describes the entire form line and is a handy reference.



Putting Ideas to Work

fmc

Form-Crete Department

General Sales Offices: Lakeland, Florida

Circle 148 on Reader Service Card

The BIG LIFT you need to move faster in 1961!

SCHWARTZ Heavy Duty Hydraulic RAMP HOIST *with* WINCH

You'll save valuable time and labor by moving powered equipment, heavy machinery, and tools *faster and easier* with a SCHWARTZ RAMP HOIST. This new, heavy duty model is designed specifically for contractors, haulers, and industrial firms to simplify the transporting of equipment and eliminate the need for cumbersome, heavy trailers for medium weight equipment.

ONE MAN OPERATION

The complete operation of the SCHWARTZ RAMP HOIST is done hydraulically so only one man is required to load, transport, and unload equipment. The heavy winch cable is attached to the equipment and the powerful winch pulls the load up the inclined ramp. When in place, the ramp is hydraulically lowered into place and you're ready to roll at highway speeds.

QUALITY CONSTRUCTION

- **Lift frame constructed of 7-inch "I" beams.**
- **Winch cable is ⅝" 6x31 IWRC steel, 34,000 lb. rating.**
- **Two 5-inch double acting hydraulic lift cylinders.**
- **Models to fit factory tandems or locally installed tandems, 120" cab to tandem center or longer.**
- **Fold-down approach plate available. This provides heavy steel bumper while in transit.**

Handles Maximum Loads!

The SCHWARTZ RAMP HOIST is engineered for rugged work and designed to handle loads up to 15 tons or the maximum capacity of the truck. The *two-way* cylinder action keeps the loading and unloading operations under control at all times. The exclusive Schwartz hydra hold-down locks the ramp securely into place.

FINGER TIP CONTROL

All of the loading and unloading operations are controlled by means of a push-button switch on a 30-foot cable. The operator has full view of the operations at all times.

For full information, write Dept. RH-16

SCHWARTZ MANUFACTURING COMPANY

LESTER PRAIRIE 1, MINNESOTA

Cicle 149 on Reader Service Card

Get the Extra Power, Performance . . . . . .

SIOUX *AIR OR ELECTRIC*

NO. 330

NO. 313

NO. 325

The new H.D. 1" No. 482 Air Impact Wrench, the mighty big one, is intended for the kind of jobs that tear up ordinary 1" wrenches.

SIOUX Air Impact Wrenches deliver up to 15% more torque while consuming 30% less air!

SIOUX Electric Impact Wrenches such as the No. 330 illustrated, deliver the extra measure of efficiency, performance and freedom from trouble you expect from SIOUX.

Use SIOUX . . . .

. . . . and Long Life of

IMPACT WRENCHES!

NO. 482

NO. 322

NO. 270

WHEN IT'S A SIOUX YOU KNOW WHAT IT WILL DO—SIOUX tells you the torque your air or electric impact wrench will deliver. Don't buy just a wrench. Buy certified SIOUX power!

The No. 270 SIOUX Slugger is an all purpose metal working tool. It cuts metal, breaks spot welds, splits nuts, shears bolts, punches out pins, and scrapes metal clean.

. . . all the way through!

ALBERTSON & CO., INC.

Sioux City, Iowa, U.S.A.

Canadian Warehouse: 379 Comstock Road
Scarborough, Toronto, Ont.

SOLD THROUGH DISTRIBUTORS IN U.S., CANADA AND OVERSEAS. FIND YOUR NEAREST U.S. DISTRIBUTOR UNDER "TOOLS, ELECTRIC" IN THE YELLOW PAGES.

▲ AIR & ELECTRIC IMPACT WRENCHES • DRILLS • SCREWDRIVERS • NUT RUNNERS • SANDERS • GRINDERS ▲ ELECTRIC POLISHERS • FLEXIBLE SHAFTS • PORTABLE SAWS • VALVE GRINDING MACHINES ▲ ABRASIVE DISCS

PLANETARY AXLES

and how Clark's broad line can save you time and money

Chances are, you well know the advantages of planetary axles. Far less strain on axle shafts and other power train components—hence far fewer breakdowns. Also, because torque is lightened and smaller gears and shafts used, you reduce GVW, add payload.

But do you know, specifically, the major advantages *Clark's planetary axles* can give you?

For one thing, of all firms building axles, no one has the experience background of Clark. Clark has produced more planetaries since 1954 than all other companies combined! The result is twofold:

(1) better performance, and (2) the broadest *standard* model line in production today . . . over 50 models, ranging in single-axle carrying capacity from 6,500 to 120,000 lbs.

Moreover, most Clark single planetary axles are available in both steering-drive and non-steering versions, as well as combined into bogies (with capacities up to 180,000 lbs).

The savings of this broad line are obvious. Less design time. Lower cost. Faster delivery. And unmatched proof of performance.

For full facts, fill out and mail the coupon.

CLARK® EQUIPMENT

CLARK EQUIPMENT COMPANY, Axle Division, Buchanan 6, Michigan

Am interested in planetary axles to carry loads ranging from_____to _____lbs, to

☐ replace present axles
☐ fit new designs

Type of application_____

Name_____

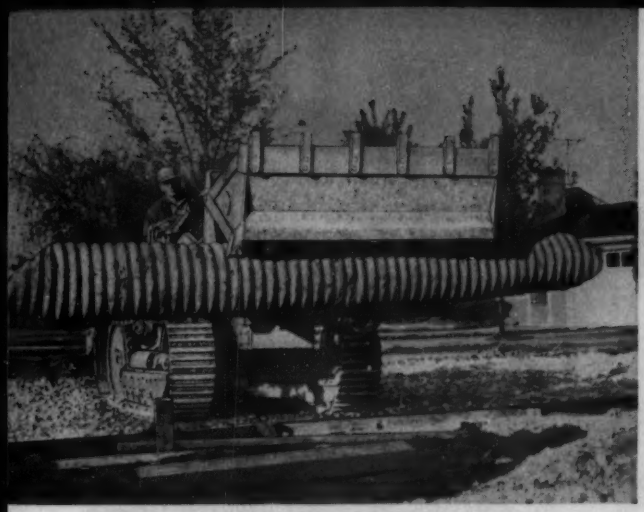
Company_____

Address_____

City_____ State_____

← *Circle* 151 *on Reader Service Card*

Circle 152 *on Reader Service Card*



Pick up bulky objects no other loader could handle. The Four-in-One operator can install culvert single-handed, including digging, laying pipe, and backfilling.

Grade road shoulders with bucket in bulldozer position. Exclusive Skid-Shoes on bottom of moldboard help the operator to hold grade with amazing accuracy.

T-340 Four-in-One handles jobs other ¾-yard rigs can't touch

Now you can cut costs on scores of small scattered jobs—jobs that take the part-time use of several types of single-purpose equipment, or are simply "let go" because it costs too much to handle them with larger, more costly power. Now, you can handle them *all* with an International Drott T-340 or TD-340 Four-in-One. *Only* the Four-in-One gives you the actions of bucket, bulldozer, scraper, and clamshell, *all* in one machine.

Nothing else available today will do so much for such a small investment as the 47-hp* T-340 or TD-340 Four-in-One. Contractors, cities, counties —a host of users—call it "terrific." Exclusive pry-action gives the bucket 11,200 pounds of breakout force; clamshell action lets you pick up and load odd-shaped objects no other front-end loader can handle. Or, *instantly* at the touch on a hydraulic control, you can be doing fine grading, or a man-size dozing job. With optional Fast-Reverser, you get five reverse speeds, each 22½ per cent faster than the forward speed, to hustle up shuttle-type jobs.

Your IH Dealer will be glad to demonstrate—why not call him today?

**Maximum engine hp at standard conditions.*

International Harvester Co., Chicago 1, Illinois

Drott Manufacturing Corp., Milwaukee 15, Wisconsin

INTERNATIONAL DROTT

Backdrag with front half of bucket to clean ditches, trim slopes, or fine-grade for seeding. By moving backward, the T-340 erases its own track marks.

Open bucket slightly and "shave" the earth as little as a fraction of an inch, if you desire. No other loader can match the T-340 Four-in-One for precision grading.

"HALF-SECOND" TURN AROUND PUTS DUMPTOR® YARDS AHEAD ON EVERY SHIFT

The waste motion and lost time of turn around operation is a thing of the past. Dumptor turn-time clocks out at a half second. And not a wheel moves!

Pivoting seat, dual-controls, and 24 mph traveling speed in both directions is the key to Dumptor's bonus hauling operation. The driver merely swings his own weight around, takes the "extra" set of controls in hand, and shuttles off. Think of the time saved and yardage gained.

Sit down, pivot 'round, and take the Dumptor controls at your nearest Koehring Distributor today.

CARRIES 30,000 lbs.! Model 100 Dumptor, 15-ton capacity, has big 10′ x 10′ square body designed to self-center material — assures full, heaped loads on every trip. Instantaneous or controlled gravity dump. Model 60 Dumptor, an 8-ton hauler, has dual controls and all the timesaving features of the Model 100.

WHERE THERE'S NO ROOM OR TIME TO TURN

DUMPTOR OUTHAULS ALL OTHERS . . .

K105

KOEHRING

DIVISION OF KOEHRING COMPANY

Milwaukee 16, Wisconsin

Circle 154 on Reader Service Card

READY TO RIP—After crew cuts roadway slab into two 10-ft-wide strips and severs reinforcing, Gradall with single-tooth ripper hooks under edge of slab and tears 7x10-ft section loose. As rig pulls, section breaks off at 5-in-deep V-shaped groove cut along its rear edge.

Rig R-r-r-rips Up Bridge Decks

A CANADIAN CONTRACTOR is pulling deteriorated concrete pavement from the decks of two old Toronto bridges with a versatile rig that tears up roadway slabs in 7x10-ft sections.

Steed & Evans, Ltd. of Maple, Ont., holds an $840,000 contract for surfacing the 86-ft-wide decks of the Prince Edward and Rosedale Viaducts. Main spans of the end-to-end structures are steel arches and approach spans are concrete slabs supported by steel piers. Total combined length of the viaducts is 2,200 ft.

The job calls for replacing pavement on one side of the viaducts at a time to keep two traffic lanes and streetcar lines in operation during construction. Steel floor beams will be repaired or replaced.

Thickness of the deck slabs varies from 12 to 14 in. Reinforcement at the bottom of the slabs consists of $\frac{5}{8}$-in. square bars on 7-in. centers transversely and $\frac{1}{2}$-in. square bars on 18-in. centers longitudinally. Heavy expanded metal fabric reinforces the top of the deck slabs.

The contractor considered slicing the deck slabs with concrete saws, but decided that blades would have to be replaced too frequently to make this method economical. Instead, slabs were cut into 7x10-ft sections with pavement breakers and the sections were torn loose with a specially-equipped Warner & Swasey Gradall.

To prevent debris from falling on a parkway, railroad tracks, and a high-voltage power line, Steed

READY FOR REMOVAL—A crane will load sections on trucks during night shift.

& Evans first erected a timber platform 5 ft below the bridge deck. This platform consisted of 4x6-in. runners spanned by 2-in. planks. It was suspended from steel hangers clipped to the lower flanges of floor beams. Crews covered the platform with tarpaulins to prevent small chunks of concrete from falling through the spaces between planks. The platform eventually reached a length of 1,800 ft.

To start demolition, workmen with pavement breakers broke the 4-in.-thick sidewalk slab away from the parapet wall and the curb. A Gradall fitted with a pavement removal bucket loaded the pieces of broken slab into trucks for removal.

Meanwhile, other workmen with pavement breakers started to cut two longitudinal tracks through the roadway slab—one along the edge of the streetcar tracks and one along the centerline of the roadway slab. This divided the roadway slab into two 10-ft-wide strips. The contractor used four pavement breakers powered by small portable compressors for this job.

Then the crew cut V-shaped grooves transversely across the strips at about 7-ft centers. The grooves penetrated to one-third the depth of the roadway slab, or about 4 to 5 in. Next, reinforcement exposed in the central track between the two strips was cut with torches. This made the strips independent. The contractor cut reinforcement in the central track for only one 7-ft-long section at a time. Otherwise, two or three sections tended to lift as one piece. These oversize sections were too big to handle comfortably.

When the V-shaped groove had been made and the reinforcing in the central track had been cut, the Gradall moved in to tear up a section, which was still held down by ½-in. deckties at 10-ft centers. These were clipped to the top flanges of the floor beams. With a single-tooth ripper on a short boom, the Gradall hooked the bottom edge of a 7x10-ft section. As the operator pulled upward with the boom, the machine rocked back on its rear wheels like a bucking horse, adding enough additional weight to crack the groove-weakened concrete at the rear edge of the section.

Workmen with torches then cut the metal fabric and distribution reinforcement in the broken groove to free the slab section. Finally, the Gradall pushed the six-ton block of concrete forward on the floor beams so that it had room to remove the next section to be torn up. Later, during the night shift, a crane fitted with chain slings lifted the slab sections onto flatbed trucks for removal from the site.

In this way, Steed & Evans removed more than 200 ft of 20-ft-wide roadway slab in a 16-hr working day. They completed redecking the south roadway of the viaducts in just 17 weeks last year. After suspending operations for the winter, they soon will start the other half of the job on the north side of the viaducts. With an experienced crew and an efficient method, the contractor expects to complete the job in 14 weeks.

STEEL CORD TIRES
CURB DOWNTIME

Records from construction, logging and drilling firms prove off-the-road steel cord tires reduce downtime and cut operating costs—no matter how heavy the loads or how rugged the job. They provide many more hours of trouble-free service than conventional textile tires.

With thinner sidewalls, they run 20°F cooler. Yet sidewalls are up to 10 times stronger—for added resistance to blowouts, impact breaks, cutting and abrasions. They're fortified with 4 plies of 400,000 psi high tensile carbon steel wire from bead to bead. Steel cord tires have a double extra-ply rating— solid proof of strength and high load capacity.

New, technically improved steel cord tires make seldom-needed repairs easy.

Increase service hours and number of retreads by specifying tires made with Bekaert Steel Wire Cord.

Write for free data booklet

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ADDRESS_____

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BEKAERT STEEL CORD, ZWEVEGEM, BELGIUM • Among Europe's Foremost Steel Wire Producers Since 1880

Circle 156 on Reader Service Card

Corson maintenance specialist measures new Aeroquip line against ordinary line that failed.

Infrequent Aeroquip Hose Line replacement is done with common hand tools, right on the job site, with minimum downtime.

Haul grades on Corson's 155 ft. deep quarry demand the best in hose line dependability for performance and safety.

Corson relies on Aeroquip Hose and Reusable Fittings for safety and dependability

With six diesel-driven shovels, twelve 25-ton trucks, three 15-ton trucks and full quarry and plant facilities, G. & W.H. Corson, Inc., at Plymouth Meeting, Pennsylvania, is the oldest lime manufacturer and one of the largest limestone operations in the country. Because rough work on steep grades and rugged terrain around the pit and loading area continually place maximum stresses on operating equipment, Corson uses only the best machinery, parts and hose lines.

Equipment failures could mean costly downtime or even accidents. To eliminate failure factors and protect safety records, Corson has standardized on dependable lines of Aeroquip Hose and Reusable Fittings for hydraulic and high-pressure lines on all trucks throughout the entire quarry and plant; hose lines on the six shovels are also being replaced with Aeroquip.

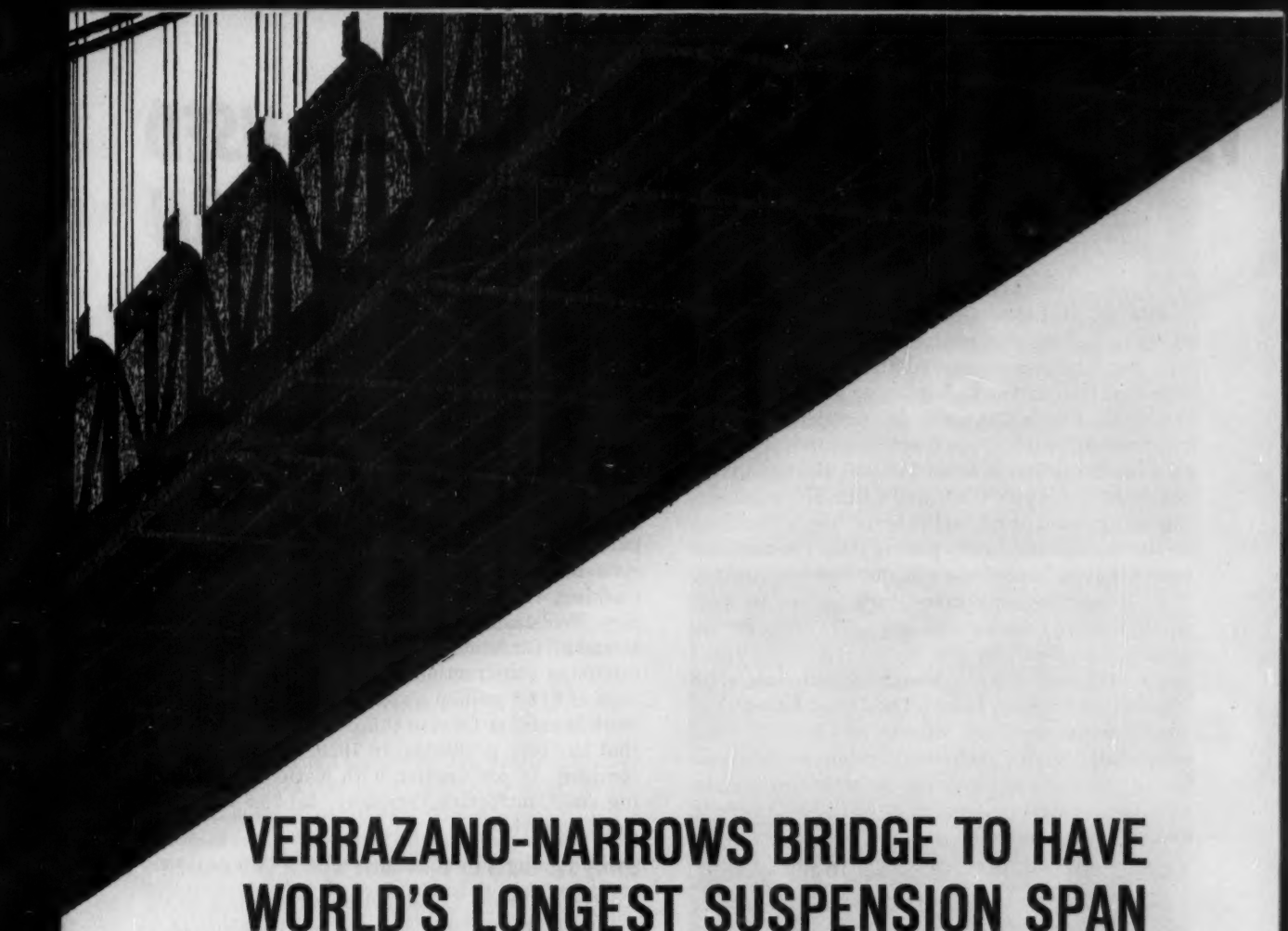
Heavy equipment operators, like Corson, find Aeroquip Hose Lines and Reusable Fittings provide long service life and reduce downtime. Should hose replacement be needed, bulk hose is cut to length and installed right on the job . . . no special tools required. Fittings can be used over and over again.

Look for your Aeroquip Distributor's name in the "Yellow Pages" under "Hose." He is a fluid line specialist and will explain how you benefit from Aeroquip products and services.

Aeroquip

AEROQUIP CORPORATION, JACKSON, MICHIGAN

This mark tells you a product is made of modern, dependable Steel.



VERRAZANO-NARROWS BRIDGE TO HAVE WORLD'S LONGEST SUSPENSION SPAN

Main cables will include 28,500 tons of USS Tiger Brand Bridge Wire

The Verrazano-Narrows Bridge between Brooklyn and Staten Island will link the parkways and expressways of Long Island, Westchester and New England with the arterial systems of New Jersey and other states to the south and west. Traffic will be able to by-pass the congested streets of New York.

This bridge sets a new record for the longest center span of any suspension bridge in the world—4,260 feet—60 feet longer than the Golden Gate Bridge. The two side spans are each 1,215 feet long making the total length 6,690 feet.

The Verrazano-Narrows Bridge has been a dream for over 70 years. Its estimated cost is $320,000,000. Plans call for double-deck roadways providing 12 traffic lanes. The main towers are 673 feet high and the lower deck at mid-span will be 228 feet above water.

Main cables. Each of the four main cables will be 35⅝" in diameter and will consist of 26,108 individual wires. The cables will be spun from 146,000 miles of No. 6 gauge Galvanized Bridge Wire—enough to stretch nearly 6 times around the world.

In addition to the 28,500 tons of Tiger Brand Galvanized Bridge Wire, American Steel & Wire Division of United States Steel Corporation will furnish 1,048 Suspender Rope Assemblies, fabricated from 392,000 ft. of 2 3/16" diameter Tiger Brand Prestressed Galvanized Bridge Rope. Also, 56,000 ft. of 1-inch Galvanized Bridge Strand Hand Rope Assemblies and 575 tons of No. 9 gauge Galvanized Wrapping Wire.

American Steel & Wire not only has the engineering experience necessary for their role in this tremendous job, but also the vast facilities to produce the various types of wire, rope and strand. American Bridge Division of United States Steel will erect the complete cable suspension system which includes 38,500 tons of Bridge Wire, plus Suspenders, Hand Ropes and Main Cable Wrapping Wire.

For further information about USS Tiger Brand Wire Rope and Bridge Strand, write American Steel & Wire, Dept. 1122, 614 Superior Ave., N.W., Cleveland 13, Ohio. *USS and Tiger Brand are registered trademarks*

American Steel & Wire Division of United States Steel

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors
Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors
United States Steel Export Company, Distributors Abroad

WHAT IS THE SUCCESS FORMULA USED HIGHWAY CONSTRUCTION

The Great Lakes Construction Company is a modern, fast-moving contracting firm with a success formula that started in 1946. It is from this date that the company's beginning and growth can be traced. Frank Converse, Jr., president, started the company with his partner, Arthur R. Cushing on a capitalization of about $10,000. His equipment consisted of a single crane and dozer. His engineering background provided the know-how with which he started bidding on city paving jobs. The first contract that was landed was a $5,000 highway project.

The company continued bidding on paving, earthmoving, grading and sewage work with increasing success. As the company's capacity of work increased, it was necessary to purchase more efficient equipment. Today, The Great Lakes Construction Co. does the variety of kinds of work enumerated above including bridge work. Great Lakes has been able to confine its activities to Ohio, with the greatest proportion of work being done in and around Cleveland.

YOUNG STAFF, DIVERSIFIED TALENT KEY TO SUCCESS

There's no secret formula that spells sure success to a contractor. At its very beginning, Great Lakes had a total work force of 5 men. In contrast, the company now employs 40 full-time staff members and up to 210 workers. But Frank Converse attributes the organization's growth and success to the nucleus of the organization which is made up of very young men with a variety of training and background, not necessarily in construction. He has molded his organization's key personnel into a top management team that hires and trains its key personnel to meet the firm's specific needs. This is a success formula that has led to the company's continued growth.

FROM $5,000 TO $4.9 MILLION OF CONSTRUCTION

The growth picture reflected in the figures above gives testimony to the men responsible for the company's management and direction. This group consists of Frank Converse, Jr. president, Arthur R. Cushing, v.p. treasurer; John G. Morano, Secretary; William H. Thomas, and Leonard E. Weitz, Board of Directors. In 1959, Great Lakes did $4.9 million of construction and in the period 1955-59 a total of $16.8 million was completed. Joint venture work is another facet of this contractor's operation that has been profitable. In 1959, for example, the company, in conjunction with National Engineering and Contracting Company, did $9.8 million in joint venture work.

OWNS 320 UNITS OF EQUIPMENT WORTH $1.2 MILLION

To Great Lakes Construction Company's equipment and its efficient use is the real backbone of its successful operation. According to Frank Converse, the efficiency of production is correlated with the kind and amount of equipment that can be worked to produce a certain amount of work in a given period of time. This contractor expands his equipment inventory at a significant rate. In 1958, $413,600 was invested in new equipment and an-

THE GREAT LAKES CONSTRUCTION COMPANY EQUIPMENT

- 7 automobiles
- 3 bins, aggregate, steel, knockdown
- 3 bins, cement
- 4 boom attachments
- 5 breakers, pavement (Cleveland)
- 5 chain saws (Homelite)
- 4 clamshell buckets (Owen)
- 1 concrete bucket
- 6 cranes (Lorain, American)
- 15 crawler tractors (Caterpillar)
- 2 curing machines (Heltzel)
- 3 dragline buckets
- 3 drills, rock, air (Cleveland)
- 6 field office buildings
- 3 finishing machines (Heltzel)
- 4 front end loaders (Caterpillar, Trojan, Ford)
- 2 Georgia buggies
- 6 graders, self-propelled (Adams, Galion, Caterpillar)
- 2 Kelly rippers
- 1 LeTourneau ripper
- 3 levels, surveyors
- 2 mixers-pavers (Foote)
- 7 parts, tool buildings
- 2 pin drivers
- 2 planers, subgrade
- 6 portable compressors (LeRoi)
- 11 portable light plants
- 3 road rollers — tandem (Galion, Buffalo-Springfield)
- 6 rollers, tamping, sheepsfoot, rubber-tired (LeTourneau-Westinghouse, Grace, Chester)
- 20 scrapers, self-propelled (LeTourneau-Westinghouse, Caterpillar)
- 2 spreaders (Blaw-Knox, Jaeger)
- 1 subgrader (Blaw-Knox)
- 3 trailers, lowboy (Rogers, Nelson)
- 2 trailers, semi-dump (TEC)
- 1 trenching machine (Cleveland)
- 10 trucks, pickup (Ford)
- 7 trucks, ready-mix (International Harvester)
- 32 trucks, stake, dump, miscellaneous (Ford, Autocar)
- 4 vibrators, concrete
- 5 water pumps, gasoline
- 4 welding torches
- 3 welders, electric (Lincoln)
- 2 wrenches, air driven
- 97 miscellaneous

BY A $4 MILLION CONTRACTOR ?

other $418,000 in 1959. The many different types and brands of equipment purchased by the Great Lakes Construction Company is shown on the previous page.

$1,380,000 OF MATERIALS PURCHASED IN 1959

A contractor's purchases of materials used in highway and heavy construction generally runs from 30%-50% of gross volume of work. In 1959, The Great Lakes Construction Company invested $1.4 million for the materials required in its construction operations. These included cement, lumber, steel, and the variety of other materials that went into the production of $4 million of highway and heavy construction.

WHAT FACTORS INFLUENCE PURCHASES IN GREAT LAKES' OPERATION

According to Frank Converse, Jr., president, there are many direct and indirect buying influences in the purchase of equipment and materials in his organization. All superintendents, master mechanics and top management have a meeting before a decision is made. On the basis of these meetings, the exchange of ideas and recommendations, as well as the service of the dealer and his facility for financing, purchasing decisions are made.

$312,000 A YEAR INVESTED IN MAINTENANCE

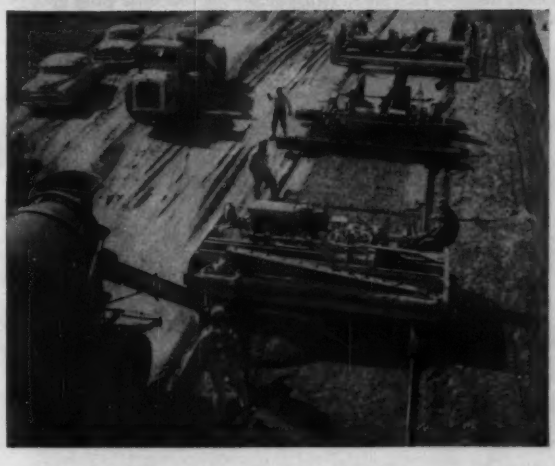
The growing emphasis which contractors are placing on equipment maintenance is confirmed by The Great Lakes Construction Company. This contractor has instituted an entirely new program of maintenance in his company in an effort to step up the efficiency of his equipment and minimize breakdowns. Over $300,000 a year now goes into this program, which requires 15 men working fulltime in maintenance. The bulk of this operation is concentrated in the Cleveland main shop, but considerable maintenance is also done at the jobs sites.

KEY MEN IN CONSTRUCTION LOOK TO "CONSTRUCTION METHODS" MAGAZINE

Frank Converse, Jr. president and founder of this rapid-growing, successful company and his key men subscribe to CONSTRUCTION METHODS magazine. They look to it for the kinds of information that can be applied in their construction operation. And, the Great Lakes Construction Company is just one of the more than 15,200 important contracting companies of all sizes that CONSTRUCTION METHODS reaches and penetrates each month.

FRANK P. CONVERSE, JR.
President, Great Lakes Construction Co.
a subscriber to CONSTRUCTION METHODS since 1943 says . . .

"I read CONSTRUCTION METHODS to keep up with current equipment and ideas that are valuable to me in my operation. I often refer certain articles to my people for interpretation. The advertisements are also a source of valuable information."

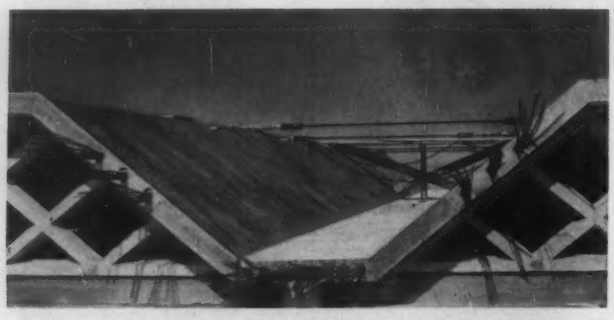


Pouring 90,000 sq. yds. of concrete, with fleet of 6 transit-mix trucks with 6 cu. yd. capacity. Canton, Ohio Expressway. ¾ mile run from batch plant to pour.

Part of Great Lakes heavy earthmoving equipment shown on Canton, Ohio expressway. Required removal of 650,000 cu. yds. of sand and gravel, clay and shale.

Construction Methods AND EQUIPMENT
A McGRAW-HILL PUBLICATION

POST-TENSIONED CONCRETE FOLDED PLATE ROOF



Above—The width of each corrugation is 22′. Top and bottom flanges are 8″ thick; inclined webs are 5″ thick. The rods and turnbuckles were used to provide temporary lateral support pending placing of concrete for 8″ open joints between adjacent plates. There are 8 straight post-tensioning cables in the bottom flange of each plate, 3 draped cables in each web. Note, also, the precast concrete window grilles which function as diaphragms.

Above—Concrete folded plates span approximately 125′ and extend the 286′ length of the building. Overall depth is 6′. Plates are supported at one end on columns, at the other by a block wall framed with columns and beams. Even at this stage of completion, it can be seen that the visual effect of these plates will work well with rows of bowling lanes.

Right—Foyer of the bowling center is roofed with 44′ long prestressed double tee beams supported on continuous beams resting on 22′ column centers. The tees were made with Lehigh Early Strength Cement at Wright's Dania plant and trucked to the job site.

Below—Cloverleaf Lanes Bowling Center, now complete at Dade County, Florida.

For 50 Lane Bowling Center

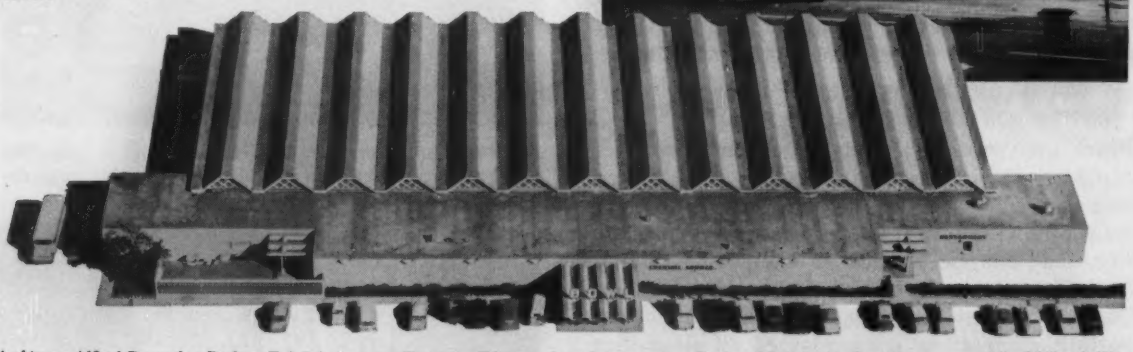
• How to provide 34,000 unobstructed square feet of floor area, in an economical but attractive building, and do it in 7 months from drawing board to grand opening? The answer—use of concrete folded plates, post-tensioned in place, in the recently completed Cloverleaf Lanes Bowling Center, Dade County, Florida.

Lehigh Early Strength Cement Permits Post-Tensioning After 3 Days

Contractor for the plates, John B. Orr, Inc., achieved top efficiency with two sets of forms (for two corrugations each) and Lehigh Early Strength Cement. The concrete, supplied by R. H. Wright, Inc., reached specified post-tensioning strength in three days, meshing neatly with the four day cycle required to strip, move and reassemble a set of forms. There were no delays.

For modern concrete construction, either precast or cast-in-place, chances are Lehigh Early Strength Cement can save you time and money. Lehigh Portland Cement Company, Allentown, Pa.

LEHIGH CEMENTS



Architect: Alfred Browning Parker, F.A.I.A. *Engineer:* Dignum Associates *Contractor:* John B. Orr, Inc. All of Miami, Fla.

Prestressed Double Tees and Folded Plate Post-Tensioning: R. H. Wright, Inc., Ft. Lauderdale, Fla.

By our method of reporting unemployment...

We're Giving The United States A Black Eye That Is Not Deserved

The way in which our unemployment is reported is giving the United States an undeserved black eye around the world. The broad concept of unemployment we use exaggerates the amount of unemployment in the United States as compared to most other countries. Our reporting system also falls short of presenting a balanced picture by concentrating on people who are idle, while neglecting jobs that are idle because people cannot be found to fill them. This editorial explains these defects and suggests improvements.

The *Monthly Bulletin of Statistics,* issued by the Statistical Office of the United Nations, has become a standard reference for international comparisons of economic performance, including employment and unemployment. Here, from the November, 1960 issue, is part of a table giving comparative figures on the rate of unemployment for the United States and a group of European countries:

	UNEMPLOYMENT RATE	
	Annual Average 1959	Jan.-June Average 1960
West Germany	2.4%	1.0%
Netherlands	1.8	1.4
Sweden	2.0	1.8
United Kingdom	2.3	1.9
United States	5.5	6.1

A Distorted Picture

If taken at face value the table clearly says that the United States is doing far worse in providing jobs for its citizens than the other countries whose unemployment records are listed.

But the figures are deceptive. They are made so, in part, by our government's use of a much broader concept of what constitutes unemployment than is used by most other countries.

Sweden provides a clear case in point. The table indicates that during 1959 Sweden had an unemployment rate of 2.0%, while the rate in the

United States was 5.5%. But a report from Sweden, published in the U.S. Department of Labor's *Labor Developments Abroad*, indicates that if they had used the same methods of calculating unemployment as we, the reported jobless rate in Sweden would have almost doubled. Thus a large portion of the gap between the unemployment rate in the United States and the unemployment rate in Sweden would have been eliminated.

Graduation To Unemployment

In general, countries listed in the table use registrations at public employment agencies as the basis for calculating their unemployment. Our Department of Labor, in making its sampling of unemployment, includes unregistered young people who are waiting for jobs or training opportunities as well as housewives who are looking for jobs in a general sort of way but who have not registered anywhere in search of them.

It used to be that graduation from college was regarded as a day for great celebration and rejoicing. But, because of the way the Labor Department does its counting of unemployment, it is now a day of sorrow. For unless our young people immediately rush off to jobs, they graduate into unemployment and swell our jobless figures.

While our government very expansively counts all the unemployed, there is no offsetting report on the number of jobs that are unfilled because no one qualified can be found to fill them. Currently there are many jobs in this category, and it is to be expected that there will be more as the technological revolution picks up momentum.

A properly balanced report on unemployment would include a record both of people who are idle, as conceived on some standard international basis, and jobs that are idle. A combination of the two sets of data would provide a much better indication of the economic health of a nation than unemployment alone.

The United Kingdom regularly collects figures on unfilled jobs as well as the number of unemployed. Thus it is not an impossible task to collect information on idle jobs. **For a fast moving economy, such as ours, the collection of statistics on unfilled jobs presents special difficulties. But this information is so important that Congress should see that it is added to our employment and unemployment records.**

A National Disservice

There is not the slightest inclination here to minimize the amount of unemployment in the United States at any time, or the crucial importance of doing everything possible to keep it at rock bottom. If the reporting of unemployment were simply for domestic consumption, it would be possible to make an appealing case for using a very broad conception of it. This is one way of underlining the importance of the problem.

But when, as is the case, international comparisons of unemployment are treated as key gauges of the effectiveness of different economies, we do ourselves an important national disservice by using an exceptionally commodious concept of unemployment. American travelers abroad can testify that they are continuously being called upon to explain why the United States does such a relatively poor job in providing employment for its people. This is an unwise and unfair burden to impose upon the nation. **We make enough mistakes of economic commission and omission without issuing reports that distort our economic performance to our own discredit abroad.**

This message was prepared by my staff associates as part of our company-wide effort to report on major new developments in American business and industry. Permission is freely extended to newspapers, groups or individuals to quote or reprint all or part of the text.

Donald C. McGraw

PRESIDENT

McGRAW-HILL PUBLISHING COMPANY

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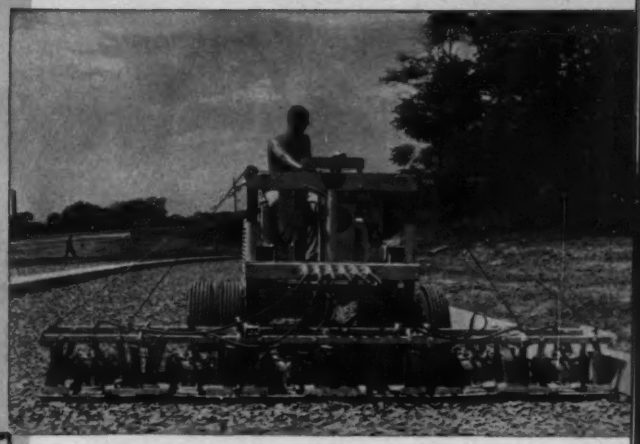
RENT A JACKSON

IT'S A SOUND, NO-RISK WAY OF DISCOVERING THE FASTEST, MOST EFFECTIVE AND BY FAR THE MOST INEXPENSIVE METHOD OF COMPACTING GRANULAR SOILS; BASE COURSES, FILLS AND SOIL-CEMENT MIXES.



Changing from the 13 ft., 3 inch working width to 88 inches overall for road travel or maneuverability on the job is accomplished hydraulically in just 30 SECONDS.

The new widening attachment (optional at added cost) is raised or lowered instantly. Makes the JACKSON by far the most efficient compactor for widening projects.

As one contractor on a federal highway project put it: "We rented this vibratory compactor from our dealer just for this job, but we're so pleased with its performance that we'll probably buy it. It has the versatility and punch to handle all our compacting, both big and small jobs, on slopes and level ground — QUICKLY."

VERSATILITY? Look at the illustrations. Then consider, too, that the individual compactor units may be fitted with operating handles and used as self-propelling units to compact the tight places other equipment can't touch. Also that the JACKSON operates in either direction, no deadheading or turning around is required.

PUNCH? 4200 3-TON BLOWS PER MINUTE from each of the compactor units provide extremely high productivity. 100% of specified density is frequently attained in a single pass. And the JACKSON does not leave the top 1-inch of the lift in a loose condition . . . a very important consideration. Maintenance and operational costs are extremely low.

Discover the outstanding time-and-money-saving opportunities afforded by the JACKSON MULTIPLE COMPACTOR by renting one from your Jackson Distributor. Name and further details on request.

JACKSON VIBRATORS, INC.

LUDINGTON, MICHIGAN

All-wheel drive and

the TS-14 "Euc" is in a class by itself!

No matter what your scraper requirements may be — small yardage work for land conservation, secondary roads etc. to the biggest projects — the Euclid TS-14 can cut your earthmoving costs.

Here's performance and overall work-ability in a medium size scraper — 14 yds. struck and 20 yds. heaped — that's way ahead of any scraper of comparable capacity. With two engines (296 total h.p.) and separate Torqmatic Drives for each axle, the TS-14 gets a heaped load in a hurry . . . gets out of the borrow pit or cut fast . . . and highballs on the haul road. It can self-load in practically any material, and with a pusher it's a big producer on the toughest jobs.

If you want a one-man earthmoving spread that can work more days per year . . . that handles a wider range of jobs and isn't stalled by steep grades and adverse conditions . . . ask your dealer for the new catalog No. 555 or better yet, have him show you one in operation.

EUCLID Division of General Motors
Cleveland 17, Ohio

Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland

greater versatility...

- **Twin-Power . . . a Euclid exclusive**
- **Hydraulic scraper operation**
- **Proven planetary drives**
- **One-man earthmoving spread**
- **Greater service accessibility**

All-wheel drive "Twins" give you a longer, more profitable work season

GM GENERAL MOTORS EUCLID

EUCLID

FOR MOVING EARTH, ROCK, COAL AND ORE

SWENCH®

Manual Impact Wrenches

NOW AVAILABLE IN NEW ½" & ⅝" UTILITY SIZES

Small in size, the all new ½" and ⅝" SWENCH manual impact wrenches are big in power when it comes to loosening tough, small sized "frozen" nuts and bolts.

Like the heavy duty SWENCH wrenches for industrial use, the new ½" and ⅝" sizes apply a tremendous wallop of torsional impact in automotive, light industrial, commercial, and utility use.

Now a completely portable SWENCH can be taken to any job — big or small — for high speed, safe and easy removal of "frozen" nuts and bolts that previously had to be burned off or drilled out. SWENCH wrenches are economical too — they cost far less than other types of impact wrenches and save valuable man hours.

In addition to the new ½" and ⅝" sizes, SWENCH wrenches are available with ¾", 1", 1¼" and 1½" drives. Call your local industrial distributor today for a demonstration or write to:

Don't wrench it - SWENCH IT!

CURTISS WRIGHT
MARQUETTE DIVISION
1145 Galewood Drive, Cleveland 10, Ohio

◀ *Circle 167 on Reader Service Card* ▲ *Circle 168 on Reader Service Card*

Sales and Service

Equipment purchasing and servicing takes less time when you know who and where to call. Keep advised of new distribution, sales personnel and other activities.

Distributor Appointments

Harnischfeger Corp.: Construction Machinery Co. of Albuquerque is distributor for P&H equipment in all of New Mexico except the seven Southern counties. Southland Tractor, Inc., of Memphis is distributor in western Tennessee, eastern Arkansas, and northern Mississippi. Ace Equipment Sales, Inc., of Portland represents Harnischfeger in the northwestern counties of Oregon and the southwestern counties of Washington. Mingolla Machinery Co. of Concord is distributor for New Hampshire and Vermont.

Koehring Co.: Challenge-Cook Bros., Inc., of Los Angeles is Koehring Div. construction machinery distributor for southern California. The Kwik-Mix Div. has named Cleveland Contractors Equipment Co. as its distributor for northeastern Ohio and Eddy-Walker Equipment Co. of Des Moines as distributor for central Iowa.

Huber-Warco Co.: Theodore J. Burke & Son, Inc., of Jamaica has been named distributor for the portion of New York State south of and including Sullivan, Ulster, and Dutchess counties.

Chain Belt Co.: Cal-Rex Machinery Sales, exclusive distributor of Rex construction machinery, has announced the opening of a new branch office and warehouse in Berkeley to serve the northern California area. The firm's main office is in Los Angeles.

Gorman-Rupp Co.: The Edward H. Flaherty Corp. has been appointed exclusive distributor of contractors' pumps for the New York City area.

On The Sales Front:

Air Reduction Co.: N. F. Moody has been named regional sales manager of Air Reduction Sales Co.'s eastern region. J. W. Cun-

613

Galion 160 works hardest where workpower counts most

This husky 160-hp. grader makes full use of more than 30,000 pounds of well-balanced weight to put more "push-power" at the blade — where power counts most in high-output grading.

Its massive one-piece welded frame is built to take the shocks and stresses of hardest working conditions day after day — keeping maintenance costs low.

Standard Galion features — including full floating axles, hydraulic booster steering, heavy-duty constant-mesh transmission and a 12′ x 29″ moldboard — permit Model 160 operators to do more work each day.

GALION® ROLLERS AND GRADERS

For complete information contact your Galion distributor or write for Bulletin 421.

THE GALION IRON WORKS & MFG. COMPANY, GALION, OHIO, U.S.A.

General and Export Offices, Galion, Ohio, U.S.A.–Cable Address, GALIONIRON, Galion, Ohio

Small CRAWLER-TRACTOR INCREASES PROFITS!

• Backfills • Excavates • Grades
• Spreads • Drawbar 2000 pounds
• Size: 41" x 84"
• Lifts 7' x 3".

MEAD **SPEEDCAT**

(1) Operates in tight places where other equipment cannot be used!
(2) Delivers power and traction proportionate to larger crawlers!
(3) Can be operated or loaded on a pick-up truck or trailer by one man!

Write for Literature or demonstration!

SPEEDCAT TRACTOR DIVISION

MEAD SPECIALTIES CO., Dept. T-431, 4114 N. Knox Ave., Chicago 41

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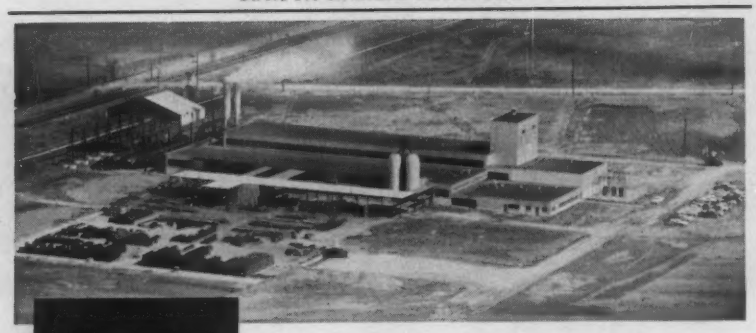


500 TONS OF CASTINGS DAILY!

With the recent opening of plant #2, shown above, our production potential of Gray and Ductile Iron Construction and Industrial Castings has now reached a maximum of 500 tons daily. This capacity, plus 15,000 patterns, plus a good on-hand supply of standard castings, plus 90 years experience in the business, is your assurance of prompt delivery, superior quality, complete uniformity and practical economy.

★ ★ ★

New and fully illustrated 168-page catalog of construction castings will be sent promptly upon request.

NEENAH FOUNDRY COMPANY
NEENAH • WISCONSIN
Chicago Office: 5445 North Neva Avenue, Chicago 31, Illinois

Circle 301 on Reader Service Card

SALES AND SERVICE . . .

continued from page 148

ingham has been appointed manager of Air Reduction Sales Co.'s Pittsburgh office.

Westinghouse Air Brake Co.: The Le Roi Div. has named Ken Von Hofman as service representative in the Central region, which covers nine states.

Yale & Towne Mfg. Co.: The Trojan Div. has appointed Edward D. Gorton eastern regional sales manager and Samuel S. Rockwood western sales manager.
George E. Gunther has been appointed domestic sales manager for the Trojan tractor shovel line.

Joseph T. Ryerson & Son, Inc.: Reginald L. Tisdale is manager of reinforcing products sales at the Indianapolis plant.

General Motors Corp.: The Detroit Diesel Engine Div. has named Stanley C. Partel manager of the Washington office for government sales.
The Euclid Div. has appointed L. H. Brannian district sales representative in Texas. He was previously located in North Dakota.

Baldwin-Lima-Hamilton Corp.: B. Alton Wolfe has been named district sales manager for the Ohio, Indiana, and Michigan territories by Austin-Western, Construction Equipment Div.

Bucyrus-Erie Co.: Frank T. House is sales service manager in charge of field services, parts sales, dragline bucket sales, sales promotion, and claims.

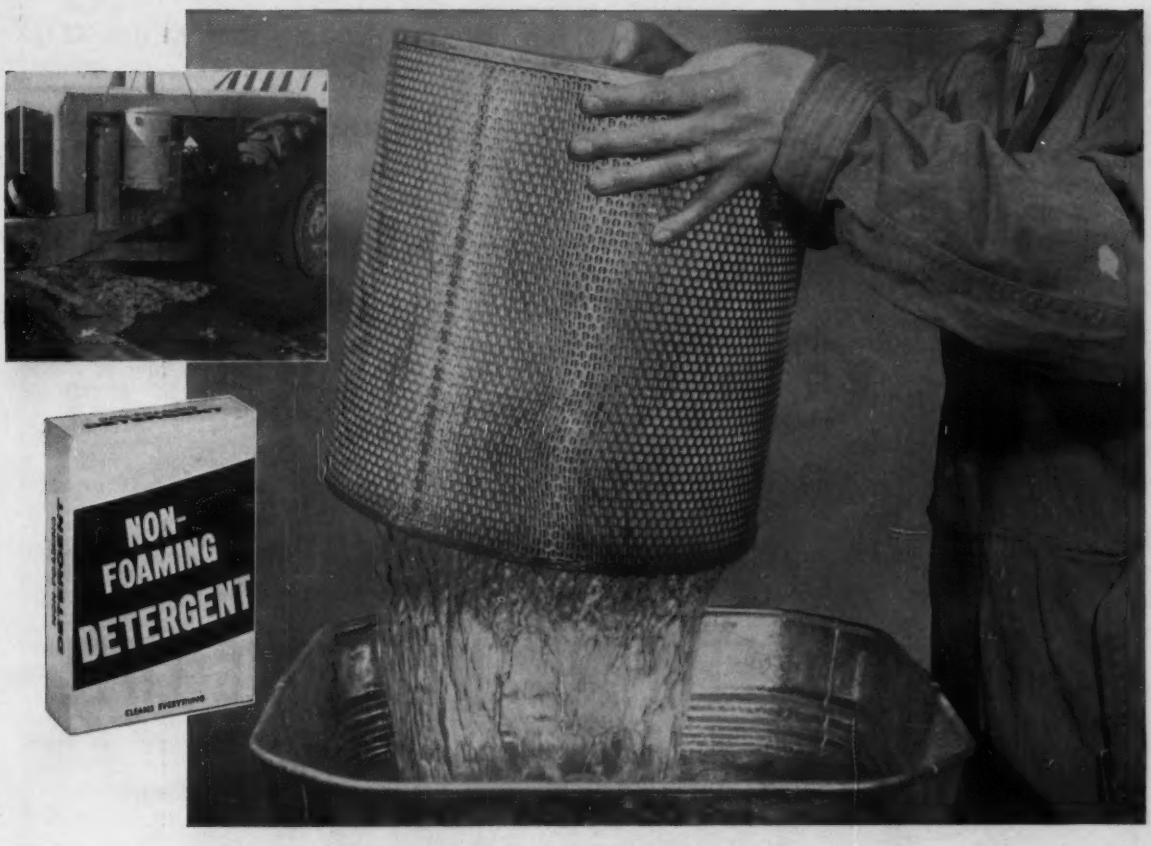
H. O. Penn Machinery Co.: John Rossi is handling new and used machinery sales in Suffolk County, Long Island.

Hyster Co.: The Industrial Truck Div. has named Don W. Smith midwest regional representative for a 12-state area.

Harnischfeger Corp.: The Construction and Mining Div. has named Stephen H. Kohl sales promotion manager.

International Harvester Co.: P. A. Tiffin has been appointed supervisor of International motor truck field service. He was formerly assistant manager of the sales district in Lubbock, Tex.

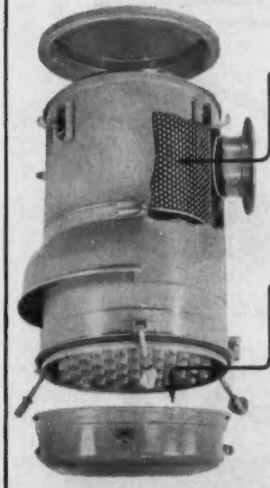
continued on page 173



Don't try this with an ordinary paper filter!

Most paper filters can't stand moisture or humidity... but you can wash the Duralife filter and save money!

Donaclones clean air 10 to 20 times better than oil bath types!



Only 2% of dust reaches Duralife paper filter!

Embossing and pleating provide maximum filtration area. Controlled porosity gives 99.9% dust removal.

98% of dust removed here!

Cluster of Donaclone tubes make up highly-efficient primary centrifugal cleaning stage. Dust is ejected into dust cup for easy servicing.

Washability proves 2 points

1. Moisture does not impair the performance of the Donaclone. Rain, fog, high humidity are no problem. Chemically-treated, special-formula paper is not affected.

2. Donaclones cost less to service. Filter seldom needs any attention because 98% of the dust is removed by the primary centrifugal cleaners. When it does need cleaning, you just dunk it in water and detergent . . . and it's like new. Replacements are mighty infrequent.

Leading equipment builders have switched to Donaclones because they protect their engines better. Install Donaclones on your equipment and get years of extra engine life. There's a dealer near you. Send coupon.

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COMPANY, INC.
666 Pelham Blvd.
St. Paul 14, Minn.

CHECK AND MAIL
☐ Send literature
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Name_____

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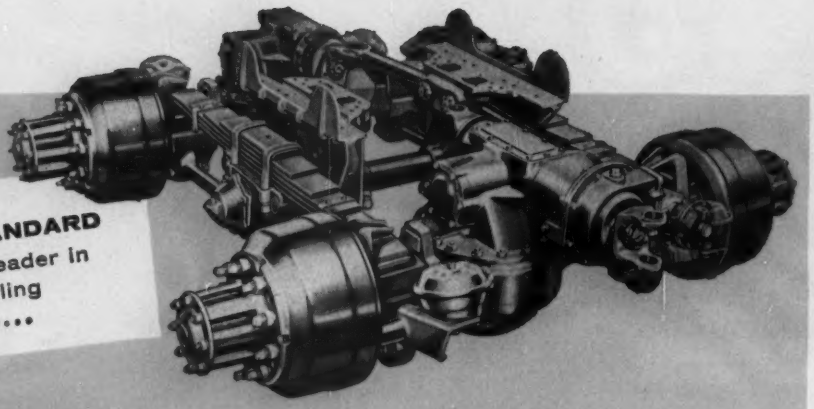


ROCKWELL-STANDARD
Acknowledged Leader in
Rugged Hauling
Operations...

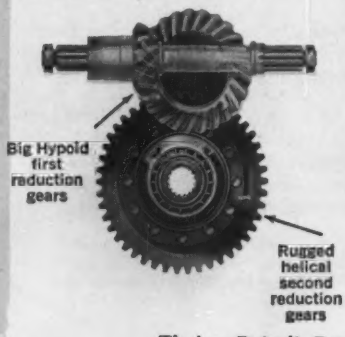
Here's why Timken-Detroit®

DOUBLE-REDUCTION TANDEMS LEAD IN TOP PERFORMANCE—LONG LIFE!

Timken-Detroit Heavy-Duty Tandems with Hypoid Helical Double-Reduction Gears are the big favorites for top performance and long life.
Here are some of the reasons why:

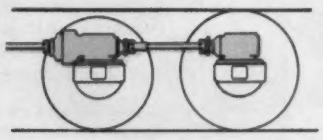
Rugged Hypoid-Helical Double-Reduction Gearing!

Balanced gearing—with two full-sized gear sets working in series to take an equal share of the load—provides a stronger power train with balanced gear set loadings and the widest range of ratios.



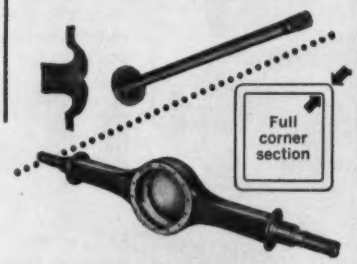
Driver Controlled Interaxle Differential!

Allows differential action between the axles to compensate for worn or mismatched tires. Both axles do equal amounts of work . . . can be disengaged at any speed, giving positive through drive when better traction is needed. *Straight-Line Through Drive* eliminates prop shaft angularity . . . increases bearing and gear life, reduces maintenance.



"Torsion-Flow" Axle Shafts and Hot-Forged Housings!

More splines, Torsion-Flow forging, and patented heat-treating processes make Rockwell-Standard shafts the toughest in the industry. Housings are hot-forged from high carbon steel, and are rectangular shaped with full strength corners for greatest strength with minimum weight.



Timken-Detroit Double-Reduction Tandems come in a wide range of capacities—6 models from 34,000 to 65,000 pounds.

Another Product of... **ROCKWELL-STANDARD CORPORATION**

Transmission and Axle Division, Detroit 32, Michigan

Circle 172 on Reader Service Card

SALES AND SERVICE . . .
continued

Dodge Mfg. Corp.: Fred J. Ebeling has been named director of sales for the company. He replaces Harry A. Torson, formerly vice president in charge of sales, who has retired.

Atlas Copco Pacific, Inc.: Richard J. Farnum and Edwin P. Montague have been appointed sales engineers with headquarters in San Carlos, Calif.

Posey Iron Works, Inc.: Raymond K. Strayer has been appointed sales manager of the Steel Plate Division.

Richmond Screw Anchor Co.: Frank G. Fearon of Falls Church, Va., has been appointed manufacturer's representative for the Ohio, Indiana, and Michigan sales area.

Sprague & Henwood: Bill B. Williams has been appointed manager of the newly-opened southwestern branch office in Tucson, Ariz.

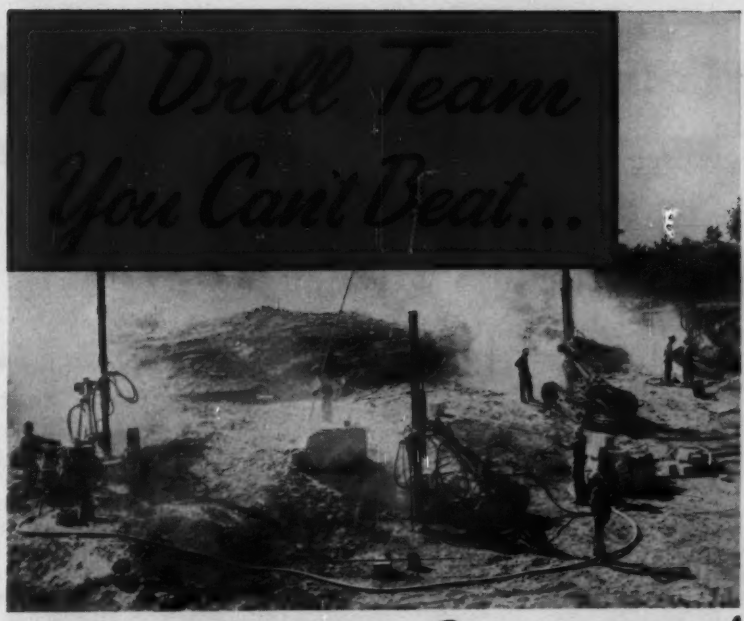
Caterpillar Tractor Co.: E. C. Chapman has been named assistant manager of Caterpillar's Sales Development Department.

Harnischfeger Corp.: Richard B. Maxson has been promoted to national sales manager for P&H power cranes and shovels. Albert B. O'Neal has been designated sales representative for the Buffalo district office. Vern Perkins has been named sales representative in Oregon and Northern California for P&H construction and mining equpiment. He will work out of the Portland district office.

Racine Hydraulics & Machinery, Inc.: Charles O. Breitsprecher is assistant sales manager for industrial hydraulic sales.

Special Mention

Minneapolis-Moline Co.: The new Moline Automotive Div. is manufacturing a full line of engines, transmissions, torque converters, axles, gear boxes, and related products. In addition, the division provides a consulting service in the design and application of Moline products to original equipment built by other manufacturers.



For On-Schedule Performance!

"SUBWAY" FOR THE DRILLS

Sizes ½" to 1¼"
Maximum Lengths of 50 Feet

Built to assure uninterrupted delivery of maximum air to the drills on the roughest rock breaking jobs. Oilproof tube; wrapped duck carcass; wear- and weather-resistant red rubber cover. Light, flexible, easy to handle. Identified by yellow criss-cross stripes.

"ALLGOOD CORD" FOR THE MANIFOLDS

Preferred by contractors because of its reliability and safety for field and jumbo manifolds where failure would shut down the job. Also used for supply lines to caissons and tunnel heading shovels. Virtually kinkproof, and with highest resistance to continuous pressure, abrasive wear and rough handling.

Sizes 1½" to 4"
Maximum Lengths of 50 Feet

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AND OTHER INDUSTRIAL RUBBER PRODUCTS

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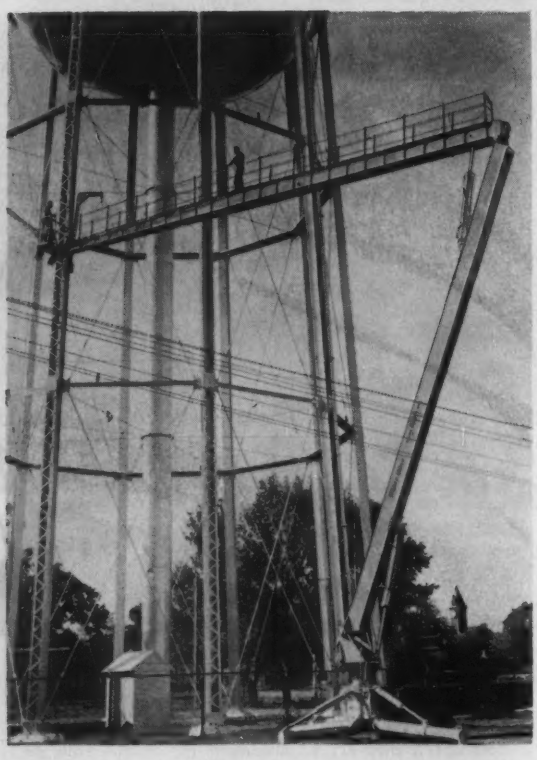
BRANCHES AND DISTRIBUTORS THROUGHOUT THE UNITED STATES.
IN CANADA: GOODALL RUBBER CO. OF CANADA LTD., TORONTO.

Circle 173 on Reader Service Card

Construction Equipment News

For more information on any item, circle the key number found at the end of each item, on the READER SERVICE CARD just inside the back cover.



Hydraulic Platform Tower Reaches 104 Ft

The Series D Ottawa Strato-Tower, mounted on a 32-ft semi-trailer, reaches 104 ft high. A 51-ft folding catwalk on the upper boom serves as a working platform at levels from 15 to 55 ft. A 24x48-in. folding steel basket at the top of the upper boom is equipped with ground-to-basket telephone and single-lever controls to spot the boom. Another set of controls allows operation from the ground. A winch crane in the basket has a 500-lb capacity for lifting equipment or material to the platform crew. A built-in 20-hp air-cooled power plant supplies operating power to the hydraulic tower. Five outriggers stabilize the Strato-Tower; three folding outriggers at the rear have a 28-ft span, and two telescoping outriggers are on the trailer. In folded position on the trailer the tower has an 11½-ft travel clearance height.—Equipment Div., Young Spring & Wire Corp., Bowling Green, Ohio.

Circle **301** *on Reader Service Card*

Hammer Delivers 8,250 Blows a Minute

This gasoline rotary hammer develops 40,500 shock waves and 8,250 impacts per min to drill rock, reinforced concrete, or masonry. One man operates the hammer, which is powered by a McCulloch engine. The hammer can withstand 5,000-lb side pressure and drill ½-in. to 8-in. holes.—Demo Tool Corp., 1001 Colorado Ave., Santa Monica, Calif.

Circle **302** *on Reader Service Card*

Backfiller Deposits Dirt in One Pass

A four-wheel backfiller, the Pow-R-Ditch Filler, deposits dirt in a ditch in one pass. A 7½-ft-long, 24-in. power-driven auger is mounted on the front of the machine. A rear-mounted 36-hp Wisconsin engine powers the unit. The machine uses mechanical drive during transport and hydraulic power while backfilling.—Vermeer Mfg. Co., Pella, Iowa.

Circle **303** *on Reader Service Card*

Crushing Plants Equipped With Grizzly Feeders

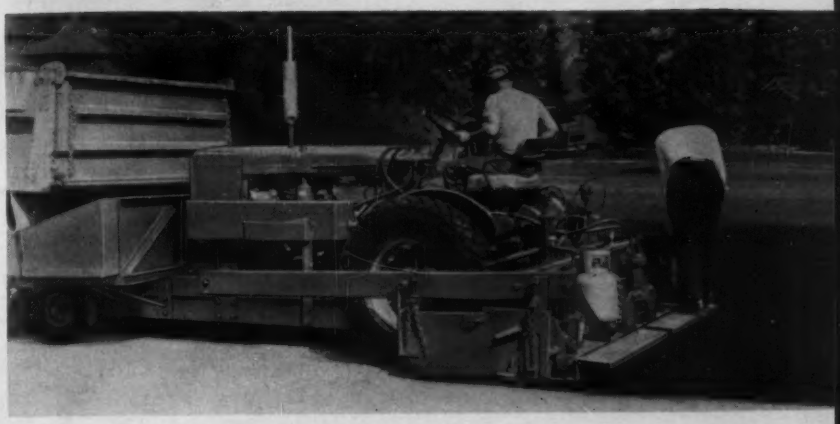
Two new Cedarapids primary crushing plants have grizzly-type feeders that bypass fines and undersize material. Both models are single impeller impact breakers. Model 4336 has a 200-400 tons-per-hr capacity, and Model 3026 is rated at 150-250 tons, depending on material characteristics and size. The 4336 unit is also available with an apron feeder. —Iowa Mfg. Co., Cedar Rapids, Iowa.

Circle 304 on Reader Service Card

Bituminous Paver Lays 10-Ft Widths

The Model 75 Trac-Paver lays up to 10-ft widths and up to 5-in. thicknesses with convex or concave crowns up to 1½ in. The rubber-tired machine travels up to 18 mph. The Trac-Paver includes a 4,000-lb-capacity hopper, a full-floating screed, hydraulic drive while paving, propane heated screed plates, hydraulic driven oscillating screed bar, and power steering.—Trac-Machinery Corp., Nunda, N.Y.

Circle 305 on Reader Service Card



Drill Rig Equipped With Tools, Pipe

The Model H.D. 250-S HI-VACuum rotary drilling rig carries its own equipment, tools, and 250 ft of drill pipe. The unit operates on a 30-hp, four-cylinder engine with one reverse and four forward speed ranges. In addition to vacuum drilling, the rig drill with forced air, forced water, and reverse water.—Houston Tool Co., P.O. Box 251, Santa Susana, Calif.

Circle 306 on Reader Service Card

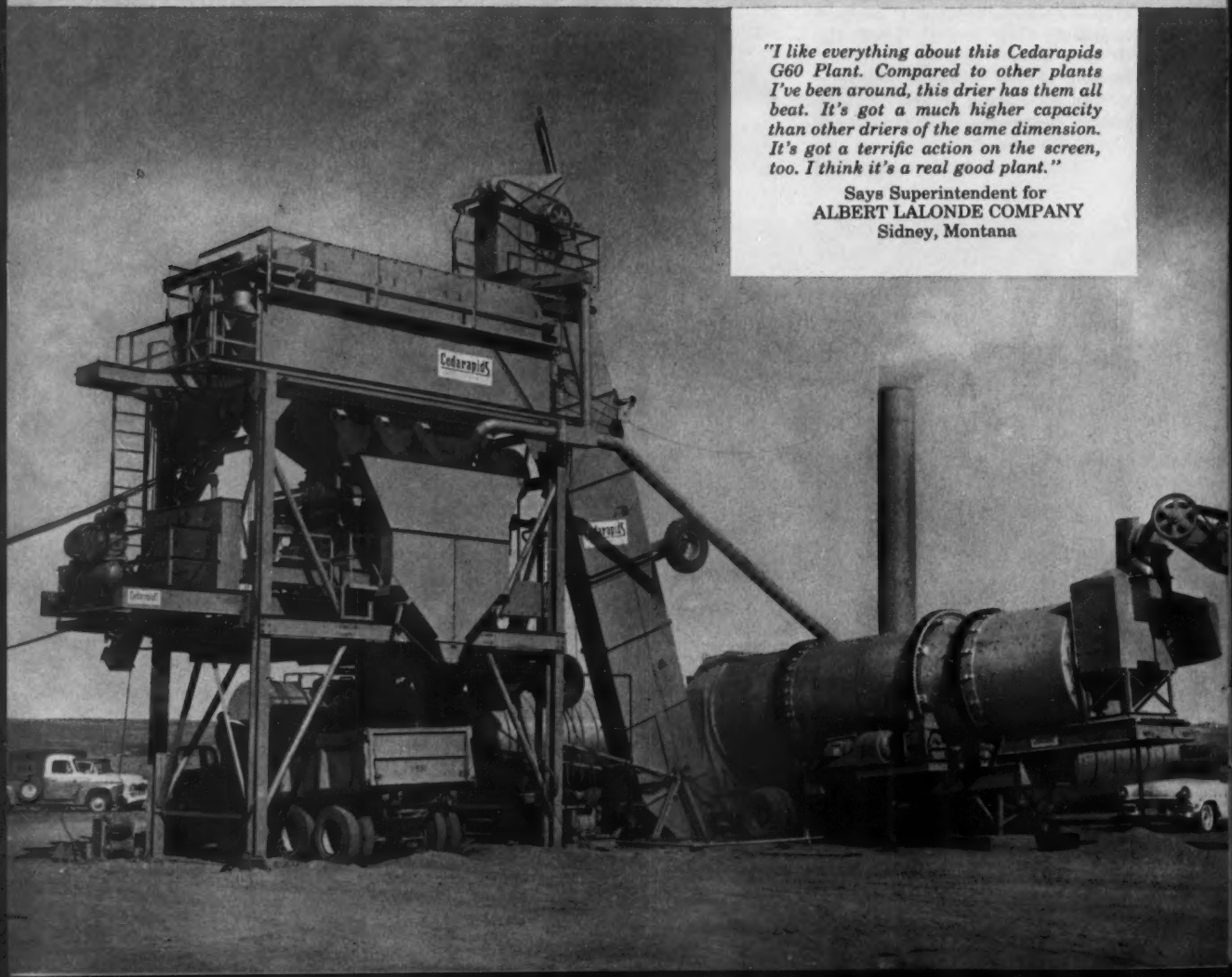
Rear-Mounted Rippers Fit Cat Graders

Hydraulic cylinders control new rear-mounted ATECO rippers for Cat No. 12 and No. 14 motor graders. A tool beam handles up to five ripping shanks. Standard shanks rip to a depth of 14 in. when mounted on a No. 12 grader and to 13 in. when mounted on a No. 14 grader.—American Tractor Equipment Corp., 9131 San Leandro Blvd., Oakland 3, Calif.

Circle 307 on Reader Service Card

to turn a "proposed" road into a new road—

CEDARAPIDS G60-A produces 238 tons of specification mix per hour



"I like everything about this Cedarapids G60 Plant. Compared to other plants I've been around, this drier has them all beat. It's got a much higher capacity than other driers of the same dimension. It's got a terrific action on the screen, too. I think it's a real good plant."

Says Superintendent for
ALBERT LALONDE COMPANY
Sidney, Montana

Changing a "proposed" road on the map to a smooth, broad reality is routine these days.

How to do it at lowest cost per ton is a more important story!

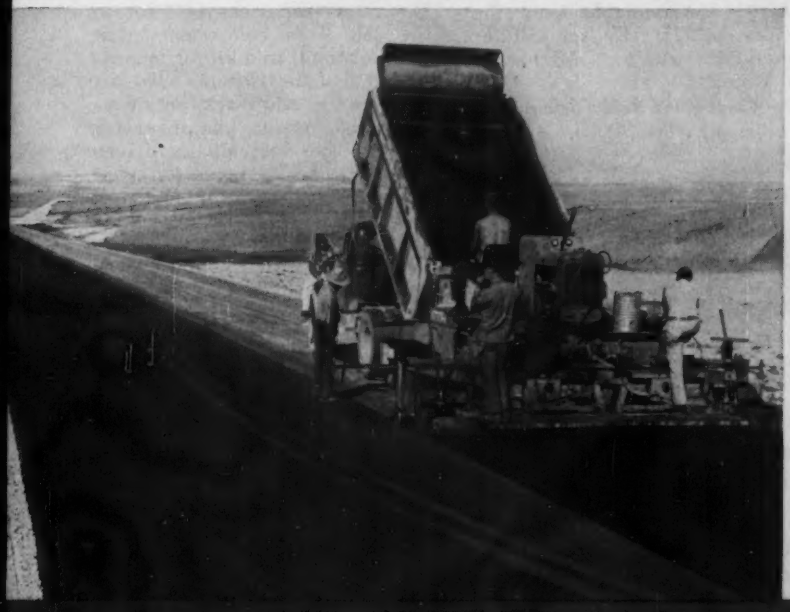
Here's the way Albert Lalonde Company did it for 9 miles of "proposed" State Highway 23 between Richey and Circle, Montana. They moved their 100% portable Cedarapids G60 Bituminous Mixing Plant right to the job, set it up quickly with its integral erecting mechanism with running gear still in place. No valuable time lost there!

Then, averaging 238 tons per hour on a 10-hour day work schedule, they completed the 50,000 ton job in less than a month. Cedarapids' precise engineering of weighing, batching and mixing units met exacting State specifications cycle after cycle. G-Unit Plants like Lalonde's can be equipped with all-automatic controls to speed the cycle and meet specifications without variation, batch after batch.

On any mixing job, medium-sized or large, more tons of specification mix in fewer working days adds up to lowest cost per ton. Ask Lalonde!

And ask your Cedarapids Dealer about the best Cedarapids Plant for your job. Choose from three sizes of portable G-Unit Plants; five sizes of H-Unit stack-up Plants; or two continuous-mix models.

This CEDARAPIDS PAVER laid it at an average 238 tph rate



Lalonde's Cedarapids Bituminous Paver, operating at only 43 fpm (maximum allowed in State specifications) matched hot plant output to keep the job rolling steadily. On a previous job, this paver laid 295 tons per hour. Listen to the job superintendent . . . "The Cedarapids Paver is the best there is. In my opinion there's not another paver made that would do the job on such a rough surface, paving a strip 14′ wide. I think you could almost keep two plants going with this Paver."

Cedarapids Engineered for lowest cost per ton

Cedarapids engineers every machine, plant and component, including crushing equipment like Lalonde is using on this job, to meet today's requirements and next year's conditions with lowest cost per ton for your greater profit, season after season.

IOWA MANUFACTURING CO. • Cedar Rapids, Iowa

Cedarapids Built by IOWA

Your Cedarapids Dealer can show you how to get lowest cost per ton

Send the coupon for information about the Complete Cedarapids Line

- ☐ Bituminous Mixing Plants
- ☐ Bituminous Pavers
- ☐ Portable Aggregate Plants
- ☐ Stationary Aggregate Plants
- ☐ Stabilized Base Mixers

Name_____

Company_____

Address_____

City_____ State_____

5-260RN

It says here that you can Rent UNI-FORM PANELS.

What are you reading?

It's Universal's new 60-page Catalog No. 761 on concrete forming products — Forms, Form Ties and Accessories.

How can I get a copy?

It's easy. Fill in the coupon below and they'll send you a copy.

Send me a copy of the new Universal Catalog 761.

NAME_____

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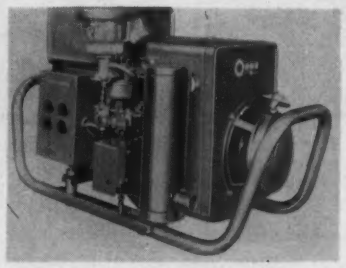
UNIVERSAL FORM CLAMP CO.

1238 N. Kostner Avenue, Chicago 51, Illinois

Circle 178 *on Reader Service Card*

EQUIPMENT NEWS...

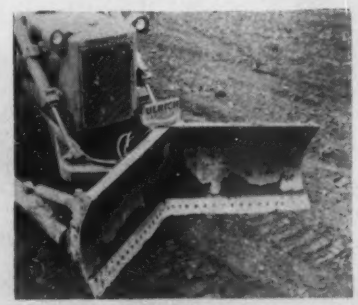
For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.



Speed Control Device For Electric Generators

Two series of Onan portable electric generating plants now are equipped with a speed control device that reduces engine speed to 1,800 rpm at no load and increases the speed when a load is applied. The Idle-MATIC device is an optional feature on all 1,500-w and 2,500-w plants of the 105AK and 205AJ Series. Conversion kits for field installation of the Idle-MATIC are available from the factory.—Onan Div. of Studebaker-Packard Corp., Minneapolis, Minn.

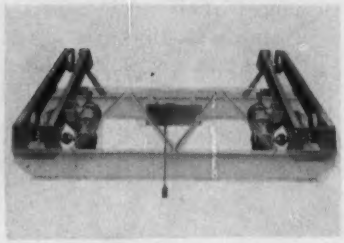
Circle 308 *on Reader Service Card*



Versatile Blade Fits D6

Ulrich's 6H Varidozer blade can be changed from a straight blade to an angle blade, forward "V", reverse "V," tilt blade, or to any combinations of these positions. Weighing about 6,000 lb, the Varidozer fits Caterpillar D6 tractors. The entire cycle of positions is controlled by four hydraulic levers mounted beside the tractor seat. A vertical hinge in the center of the blade, controlled by two hydraulic arms and two hydraulic tilt cylinders, permits each of the two sections to move 25 deg either forward or back. The entire blade tips 10-deg forward or back, and either side tilts up to 56 in. The 6H model is the first of a series, with Varidozers to fit larger tractors planned for the future.—Ulrich Mfg. Co., Roanoke, Ill.

Circle 309 *on Reader Service Card*



Crane Kit

Motorized cranes can be built on the job from components that can be bought as a kit for mounting on structural beams. The kit contains two end trucks with controls, instructions, and mounting details. The individually driven end trucks are designed for spans up to 40 ft, capacities up to 6 tons, and will travel from 50 to 140 fpm. — Cleveland Beacon Products Co., 860 Adison Rd., Cleveland 3, Ohio.

Circle 310 *on Reader Service Card*

Gasoline-Powered Trucks

Two new series of Diamond T gasoline powered trucks are designed for both on an off-highway work. The standard engine of the six-wheel Model 4300 (photo) produces 170 hp at 3,400 rpm; the engine on the Model 4000 produces 145 hp at 3,200 rpm.—Diamond T Motor Truck Co., 4401 W. 26th St., Chicago 23, Ill.

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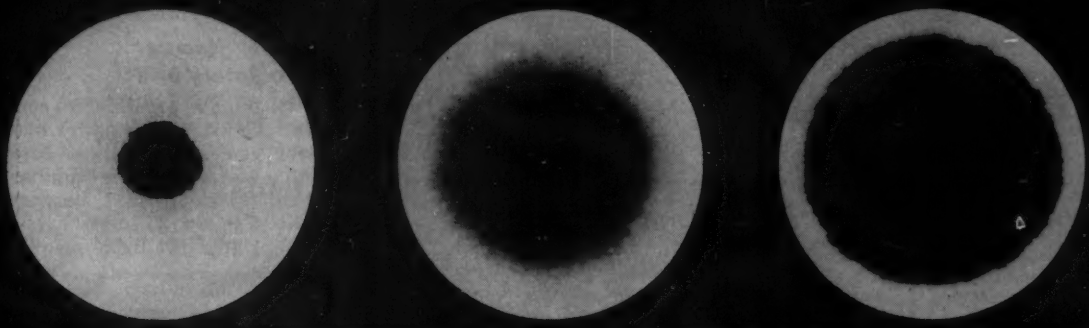

3 drops of oil—3 conditions. First oil doesn't spread and has lost dispersancy. Second oil spreads into paper, has good dispersancy. Third spot indicates good dispersancy, but high soot level. Shell "Oilprint" Analysis can give you advance warning of engine trouble.

BULLETIN:

Shell 5-minute "Oilprint" Analysis shows what's going on inside your engines; now used by over 500 fleet operators

Now, with Shell's ADC® "Oilprint" Analysis, you can test used engine oils in your own shop. And in a matter of minutes.

Read how this unique testing process can give you advance warning of engine trouble, help you set up more effective maintenance schedules and reduce roadside breakdowns.

A DROP of oil from an engine is an excellent indicator of the lubricant's condition and—to the experienced eye—of the engine's condition.

It can tell you if the oil is still satisfactory for continued service. It can provide clues to faulty carburetion. It can show a coolant leak. It can help you schedule proper oil drain intervals. And much more.

"Oilprint" Analysis can be made in your own shop.

How do you get this information quickly?

Over 500 fleet operators have found the answer in Shell's 5-minute "Oilprint" Analysis.

All that's needed: Shell's ADC "Oilprint" Analysis Chart and a warmed-up engine.

A few drops tell the story

Take the problem of sludge accumulation.

If the oil makes a dark concentrated spot, it has lost its ability to hold sludge particles in suspension. Poor dispersancy, our technical people call it. The oil should be changed.

By adding Shell Indicator Fluid, a Shell Representative can tell if the oil still has its anti-wear properties. In Shell's Motor Oils for fleet use, these properties guard against engine wear.

You can also determine the relative amount of soot and contaminants—such as wear debris and dust that might foul your engine. If there's a water leak or anti-freeze contamination, proper evaluation of an oilprint will reveal it.

Free Demonstration

Your Shell Industrial Products Representative will gladly give you a free demonstration of the Shell ADC "Oilprint" Analysis. He will show you how to set up a "life cycle" report of every engine you operate. Call him today.

SHELL

A BULLETIN FROM SHELL
—where 1,997 scientists are helping to provide better products for industry.

Circle 179 on Reader Service Card

EQUIPMENT NEWS...

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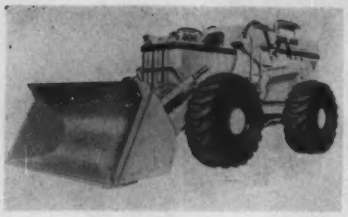
New 3-Yd Loader

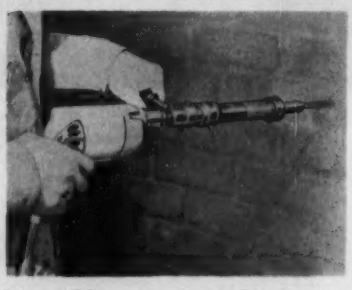


Third in Thew's Moto-Loader series of rubber tired, four-wheel drive tractor shovels is the Lorain ML-309. It can lift 18,000 lb and carry 9,000 lb. The 3-yd machine is powered by a 175-hp Cummins diesel engine and is steered by twin hydraulic cylinders mounted on the rear axle.—The Thew Shovel Co., Lorain, Ohio.

Circle 312 on Reader Service Card

Power Hammer For Rotary Drill

Weighing 2¾ lb, this tool converts a rotary drill to a power hammer for percussion drilling. Attached to a ¼-in. drill, the hammer will drill holes in hard masonry for No. 6 to No. 20 screw sizes. It is adjustable for light, medium, or



heavy blows, and a rubber covered handle folds flat along the hammer barrel when not in use. —The Rawlplug Co., Inc., 248 Peterville Rd., New Rochelle, N.Y.

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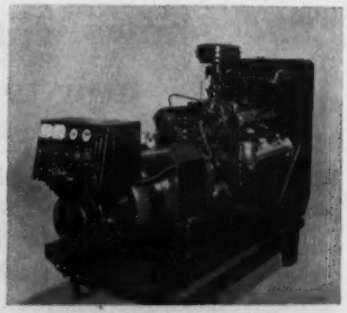

Electric Plant

This new Kohler electric plant with a dual rating of 85-kw stand-by and 75-kw continuous duty replaces the former 75-kw plant. Available in both gasoline and gas-gasoline models, the plant's 8-cylinder engine develops 168 hp at 1,800 rpm.—Kohler Co., Kohler, Wis.

Circle 314 on Reader Service Card

Rotary Air Compressor

The latest model of the Le Roi obtained with a 2-ft lift mast at 125-cfm rotary air compressor is powered by a 53-hp engine operating at 1,600 rpm. The portable unit weighs 2,200 lb. The entire hood can be removed by loosening eight screws for easy access to the engine and compressor, and the side panels can be unfolded to provide servicing room.—Le Roi Div., Westinghouse Air Brake Co., Sidney, Ohio.

Circle 315 on Reader Service Card

MARQUETTE *Star-Jet* REDI-PAC

CONTAINS 1 Star-Jet Torch handle, 1 Cutting Assembly with tip, *full-size* oxygen and *full-size* acetylene gas regulators, 25 ft. double line hose, welding goggles, tip cleaner kit, torch lighter, combination wrench, Redi-Pac Tool Box.

FEATURES efficient "long-cone" flame from heat resistant solid copper alloy tips . . . "O" ring seals for full tip rotation without removing tips . . . large fluted aluminum swivel nut to protect "O" rings and threads . . . strong, light, sure-grip aluminum alloy handle.

FULL SIZE REGULATORS — nothing is "scaled down" in this complete outfit. Regulators fit all standard tank connections. Easy-to-read gauges.

USE IT FOR any welding, heating, brazing, soldering, or cutting job. Low operating cost. With this one outfit in its heavy duty mechanic's tool box you'll be fully equipped, no extras to buy.

14-PIECE OUTFIT ONLY (reg. $157.75 value) $119.95

You save $37.80 over the item-by-item price for this complete outfit—the equipment that's first choice with repair and maintenance shops! So don't delay—call your MARQUETTE Distributor for your complete, modern cutting and welding outfit . . . the MARQUETTE Star-Jet Redi-Pac.

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MARQUETTE MANUFACTURING CO. DIVISION OF MARQUETTE CORPORATION 307 East Hennepin Ave., Minneapolis 14, Minn.

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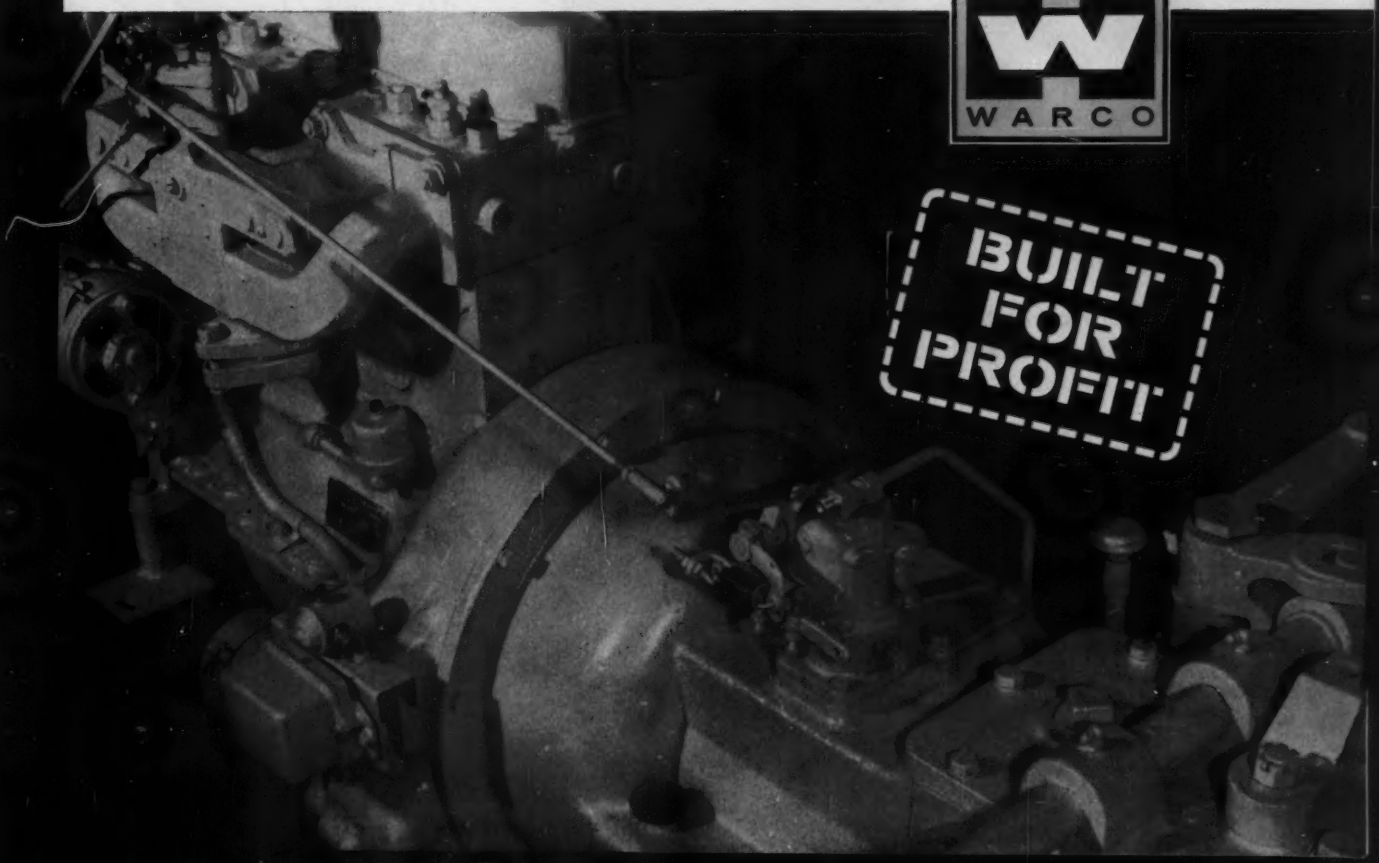
Profit insurance built in

Economy of operation is probably one of your most important considerations when purchasing new equipment. It's one of our prime concerns, too. That's why there is a torque converter and tail shaft governor on every Huber-Warco tandem roller. What does this mean to you? It means power when you need it for faster, better jobs at less cost. For instance, the Huber-Warco torque converter doubles available power — instantly, cuts fuel consumption, does away with the master clutch, scuffing, stalling and overloading. And most important, increases the life of the engine, gears and other vital parts as much as 50%. The operator doesn't have to worry when working on grades either, because the tail shaft governor automatically maintains the rolling speed, within close limits, set by him. Means a better rolling job, too, because after he presets the speed he can forget it and concentrate on the job. These are but a few of the benefits you get with Huber-Warco tandem rollers. Check your Huber-Warco distributor. He'll give you all the details.

HUBER-WARCO COMPANY • MARION, OHIO, U.S.A.

HUBER W WARCO



Four-Speed Digger Angles In Any Direction

When attached to a Truco universal turret derrick, this hydraulic digger operates in any vertical or angle position with auger sizes up to 30-in. dia. Any one of four speeds is selected from a single lever control.—Truck Equipment Co., 3963 Walnut St., Denver 5, Colo.

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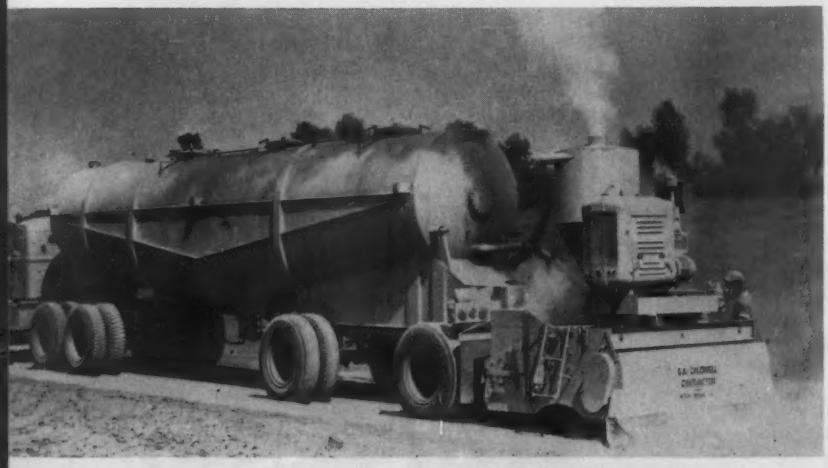

Device Speeds Cement Spreading

The Cyclone, a device that mounts atop a spreader behind a dry cargo transport, speeds soil cementing operations for highway base courses. Up to 145 bbl of dry cement can be spread in 40 min, and more than a mile per day can be laid by a crew of 12 men. The Cyclone drains dry cement from the transport's high-speed discharge air stream.—Delta Tank Mfg. Co., Material Handling Equipment Div., P. O. Box 1469, Baton Rouge, La.

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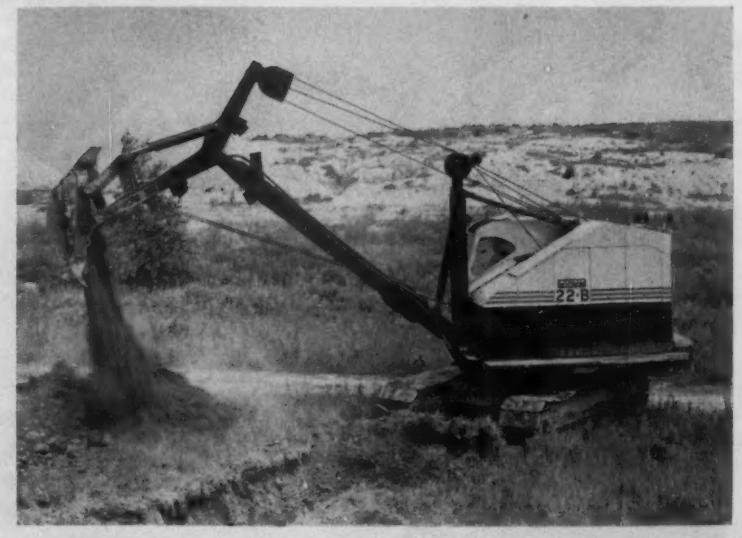


Two-Way Service For Hydraulic Attachment

This hydraulic attachment is designed for either backhoe or front-end loader application with Bucyrus-Erie 22-B crawler machines. The attachment is especially useful for trenching in cramped areas. Two buckets are available for the attachment: a 1½-yd, 72-in.-wide model or an 84-in.-wide bucket with side cutters and two cutting edges with teeth.—Bucyrus-Erie Co., South Milwaukee, Wis.

Circle 318 *on Reader Service Card*

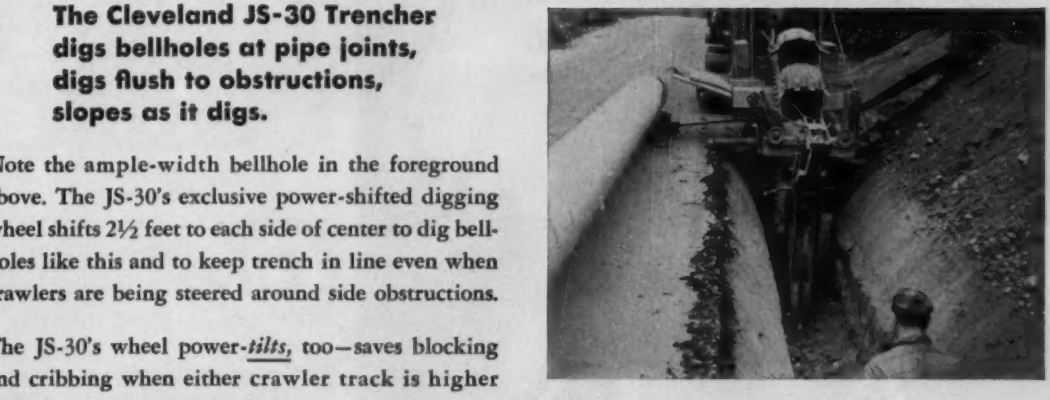
DIG TRENCH AND BELLHOLES IN SINGLE PASS

The Cleveland JS-30 Trencher digs bellholes at pipe joints, digs flush to obstructions, slopes as it digs.

Note the ample-width bellhole in the foreground above. The JS-30's exclusive power-shifted digging wheel shifts 2½ feet to each side of center to dig bellholes like this and to keep trench in line even when crawlers are being steered around side obstructions.

The JS-30's wheel power-*tilts*, too—saves blocking and cribbing when either crawler track is higher than the other on curbs, side slopes, etc.

Note, too, how the JS-30's power-shifted V conveyor with operator-controlled speeds up to 1,000′ per minute—another Cleveland exclusive—easily handled the big spoil volume from the wide-sloped trench. The JS-30 sloped the trench to 6′ top width as it dug.



The JS-30 is a trencher of amazing utility. Write today for all the facts.

CLEVELAND TRENCHER

THE CLEVELAND TRENCHER CO., 20100 ST. CLAIR AVE., CLEVELAND 17, OHIO

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3-SPEED

handles bigger loader power—speeds bigger loader jobs

Here's the new, more powerful hydraulic transmission loaders have long needed—the CRT-3531 "Time-Study" TORQMATIC 3-Speed.

Built for bigger jobs, it can handle 350 ft.-lbs. of engine torque . . . features a special high-efficiency, three-element torque converter with a stall torque ratio of 3.7 to 1 . . . provides total torque multiplication of 29.6.

And, because it has only 3 speeds instead of 4, it cuts the shifts operators must make—naturally the three-speed loaders crowd, dig, load and travel faster.

What's more, like the time-proved CRT-3331 "Time-Study" TORQMATIC, *it's designed to need no major service for two-engine overhauls.*

The reasons are clear: Integrated converter-transmission eliminates troublesome hoses . . . planetary (not countershaft) gearing splits tooth load three ways . . . clutches are up to twice the diameter of those used in other hydraulic transmissions.

Want the full story? Write Allison today.

Allison Division of General Motors
Indianapolis 6, Indiana
In Canada: General Motors Diesel Ltd., London, Ontario

Allison TORQMATIC

TORQMATIC® DRIVES

THE MODERN DRIVE FOR MODERN LOADERS

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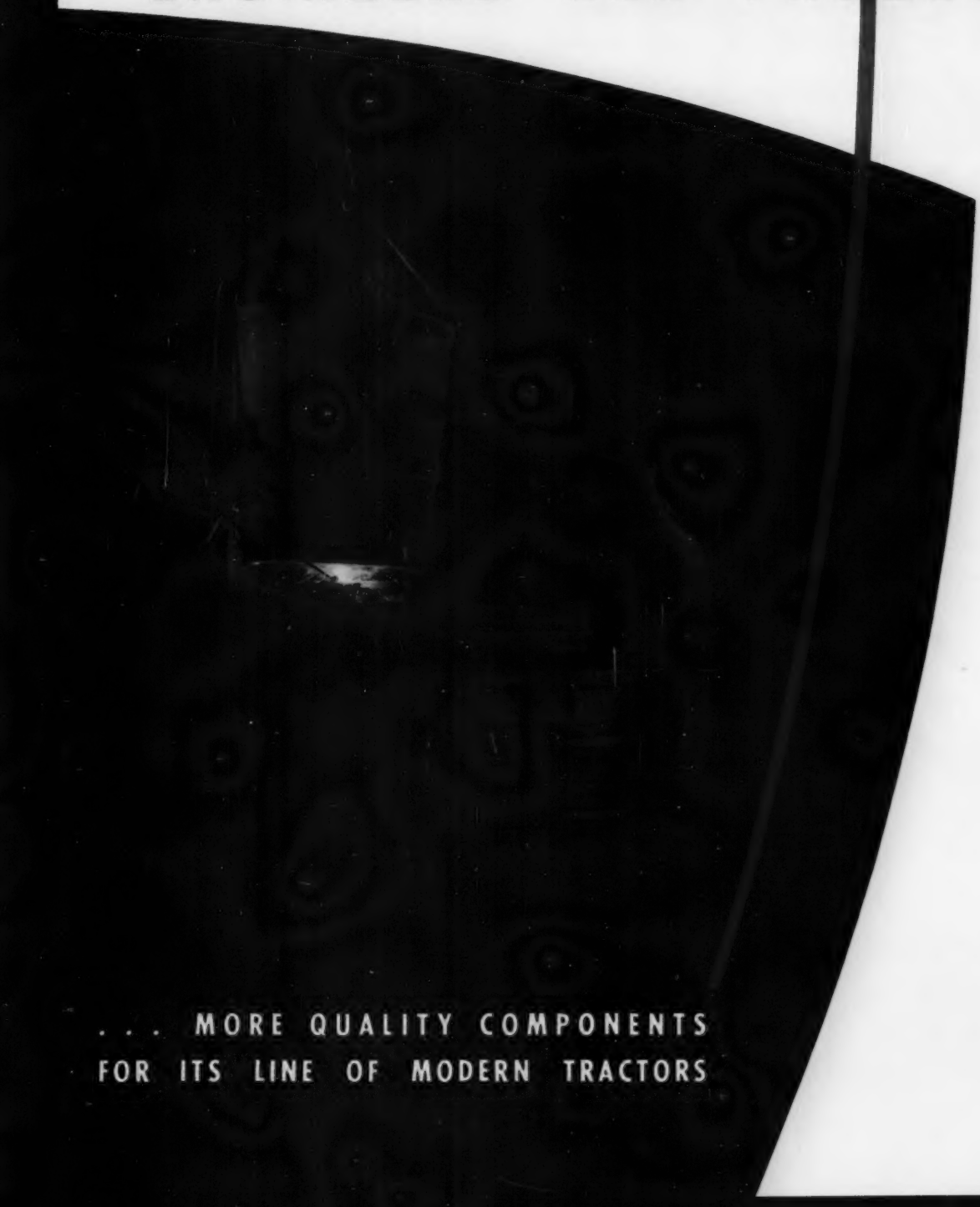
EIMCO®

ENGINEERS AND PRODUCES



. . . MORE QUALITY COMPONENTS
FOR ITS LINE OF MODERN TRACTORS

. . . FROM THE FURNACE . . .

Eimco manufactures and produces all its own steel castings, transmissions, parts and components, with the exception only of engine, torque converter, ball bearings and the like.

Quality controlled from electric furnace to finished assembly by a vast staff of metallurgists, engineers and technicians, the result is a machine that Eimco can guarantee for a full year . . . crawler-tractors that have established a record of over seventy per cent savings to operators in replacement parts, as compared to any other leading make of crawler-tractor equipment!

With seventy-five years experience in designing and building heavy duty industrial equipment, Eimco has the fabrication and production know-how to manufacture more high quality components of its great tractor lines. With an Eimco, you are sure of the extra care and craftsmanship that has built a world-famous record of service for Eimco equipment, everywhere.

We thought you'd like the facts, instead of propaganda. Remember that every Eimco is a product of Eimco's famous "Advanced Engineering and Quality Craftsmanship" . . . your assurance of greater work output and profit, with this modern line of crawler-tractors.

EIMCO 103	EIMCO 105	EIMCO 106
100 H.P. DIESEL	143 H.P. DIESEL	205 H.P. DIESEL

TRACTORS • DOZERS • EXCAVATORS • FRONT END LOADERS
LOG LOADERS • SPECIAL STEEL MILL EXCAVATORS AND FRONT END LOADERS

For full specifications and all the facts, contact the Eimco dealer or branch near you, or write The Eimco Corporation, P.O. Box 300, Salt Lake City 10, Utah, U.S.A.

"ADVANCED ENGINEERING AND QUALITY CRAFTSMANSHIP SINCE 1884"

THE EIMCO CORPORATION

BRANCHES AND DEALERS IN PRINCIPAL CITIES THROUGHOUT THE WORLD

TO THE FINISHED PART

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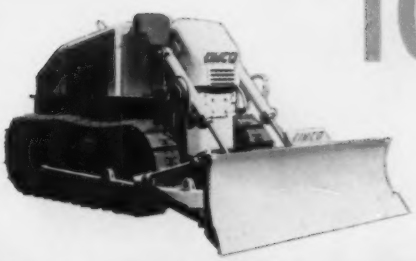
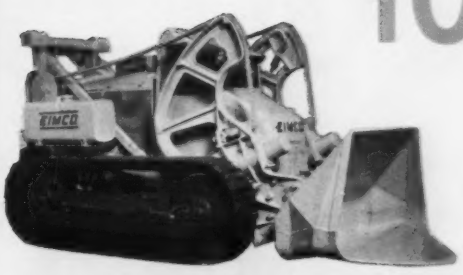


TREATED FOR DURABILITY AND RIGIDLY TESTED

105



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EIMCO

TRACTOR LOADER DIVISION

634 SOUTH 4th WEST, SALT LAKE CITY, UTAH, U.S.A.

EXPORT OFFICE: 51-52 SOUTH STREET, NEW YORK, N. Y.

HOMOFLEX AIR HOSE

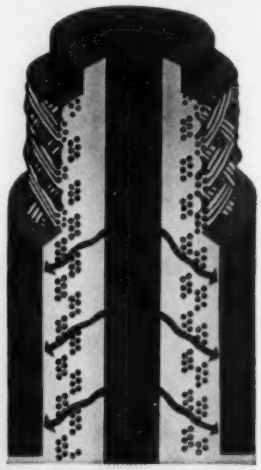
Flexible as a Rope...And Weighs Less Than Any Other Hose Of Equal Working Pressure

Only Raybestos-Manhattan offers unique Homoflex construction. Rubber penetrates and bonds hose plies to produce a rugged, inseparable tube-to-cover bond—yet Homoflex is lighter, easier to handle than any other hose of equal working pressure!

It's mandrel-made with no pre-set twist, so it coils and uncoils freely in any direction *without* kinking with less fatigue to operator. This R/M feature construction has proved the longest lasting, most economical hose you can specify. Made also for water service.

Other R/M hose types are engineered for special job conditions. Let your R/M distributor show you how to get More Use per Dollar with R/M hose.

STRONG—LIGHT—KINKLESS



EXCLUSIVE HOMOFLEX CONSTRUCTION makes strength member and tube virtually inseparable for long, trouble-free service. Uniform inside and outside diameters permit faster, safer, easier coupling—faster, fuller flow.

RM102

RM

RAYBESTOS-MANHATTAN, INC.
MANHATTAN RUBBER DIVISION • PASSAIC, N. J.
ENGINEERED RUBBER PRODUCTS

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EQUIPMENT NEWS...

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

Tractor-Mounted Backhoe

The Parsons-Shawnee 1500 backhoe fits all popular makes of utility tractors. It digs to 15 ft and reaches 20 ft. Its loading height is 12½ ft. Among the backhoe's features are telescoping stabilizers and rubber stops mounted on each side of the frame to cushion the pivot assembly. — Parsons Co., Div. of Koehring Co., P.O. Box 431, Newton, Iowa.

Circle 319 on Reader Service Card

Ramp Hoist

Designed for mounting on tandems that measure 12 ft or longer from cab to tandem center, the Ramp Hoist handles loads up to 15 tons. The rig consists of a hydraulically operated platform with a winch and cable. All of the operations are controlled by a push-button switch on a 30-ft extension cord. — Schwartz Mfg. Co., Lester Prairie, Minn.

Circle 320 on Reader Service Card

Lubricant

Dri-Slide frees up and reactivates sheaves, bearings, chains, reciprocating parts, pins, and bushings. The lubricant is molybdenum disulfide dispersed in light petroleum hydrocarbons. When placed on a bearing surface, the lubricant is unaffected by most acids, alkalis, water, heat, and cold. It will withstand temperatures up to 750 deg.—Bux Dri-Slide, Div. Mag-Craft Corp., Fremont, Mich.

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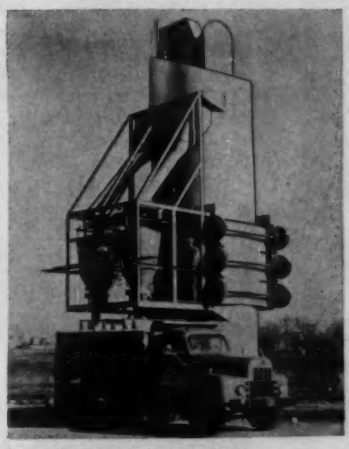
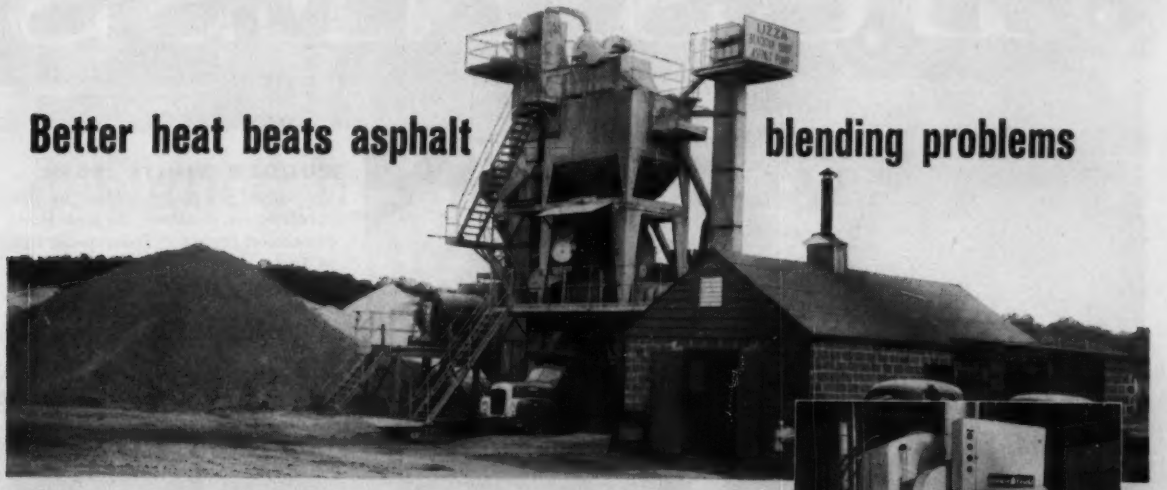


Portable Batch Plant

This Nomad paving plant delivers 360 batches an hr by combining a 400-bbl portable cement silo with twin paving batchers and a 600-bbl-per-hr elevator. — Engineered Equipment, Inc., Waterloo, Iowa.

Circle 322 on Reader Service Card

Better heat beats asphalt blending problems



Lizza Asphalt Construction Company, Oyster Bay, Long Island, cuts maintenance costs, gets top performance blending asphalt into black-top paving materials with Cleaver-Brooks Peak-Temp oil heater.

Heating 10,000 gallons of asphalt a day has been a lot easier for J. W. Slawson, superintendent of Lizza Asphalt Construction Company, since the installation of a Peak-Temp oil heater, Model CPT 500-12, in March, 1958.

"We don't have to worry about overtime costs," says Mr. Slawson. "The fully automatic operation of this heater, plus low-pressure operation, keeps manpower requirements down. Maintenance is low, and our records show operation is efficient. The unit has run continuously (more than two years) without appreciable trouble."

For safe, low-pressure operation and continuous, automatic heating to 480F, Peak-Temp has proved itself to be the economical solution to construction material and process heating problems. For details, write Cleaver-Brooks, Dept. C, 399 E. Keefe Ave., Milwaukee 12, Wisconsin.

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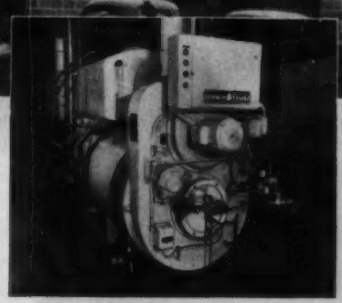
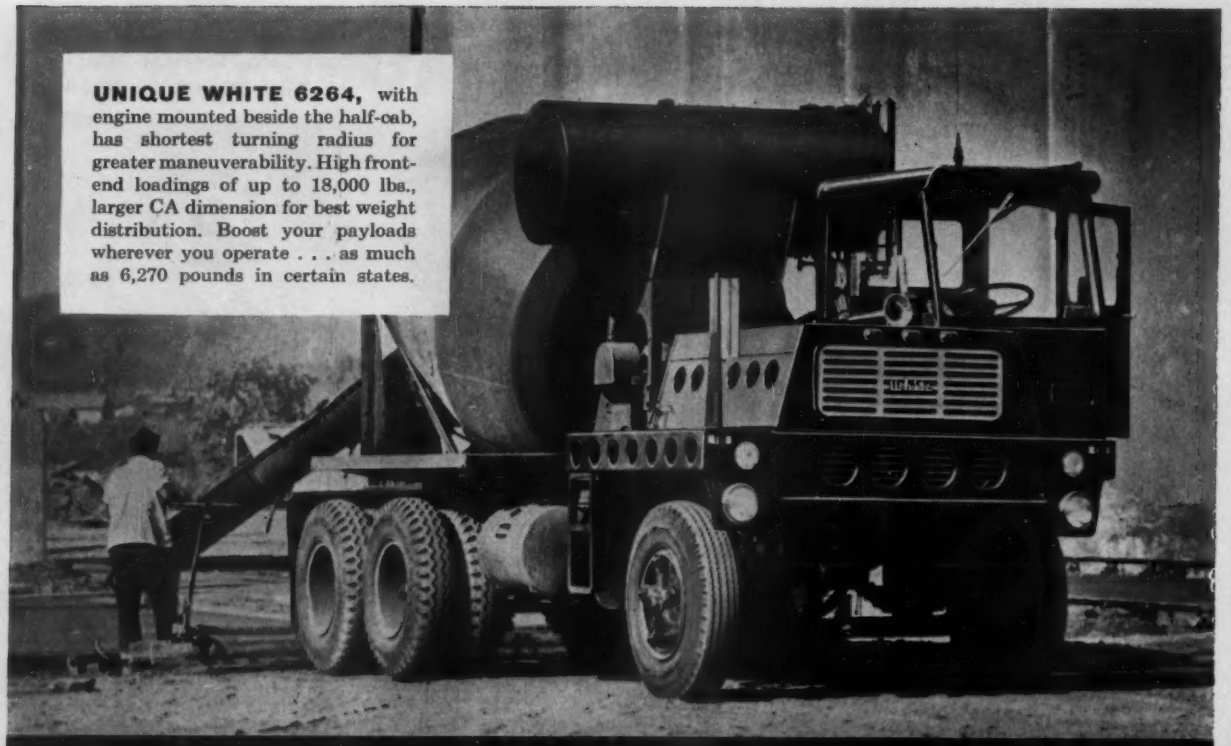


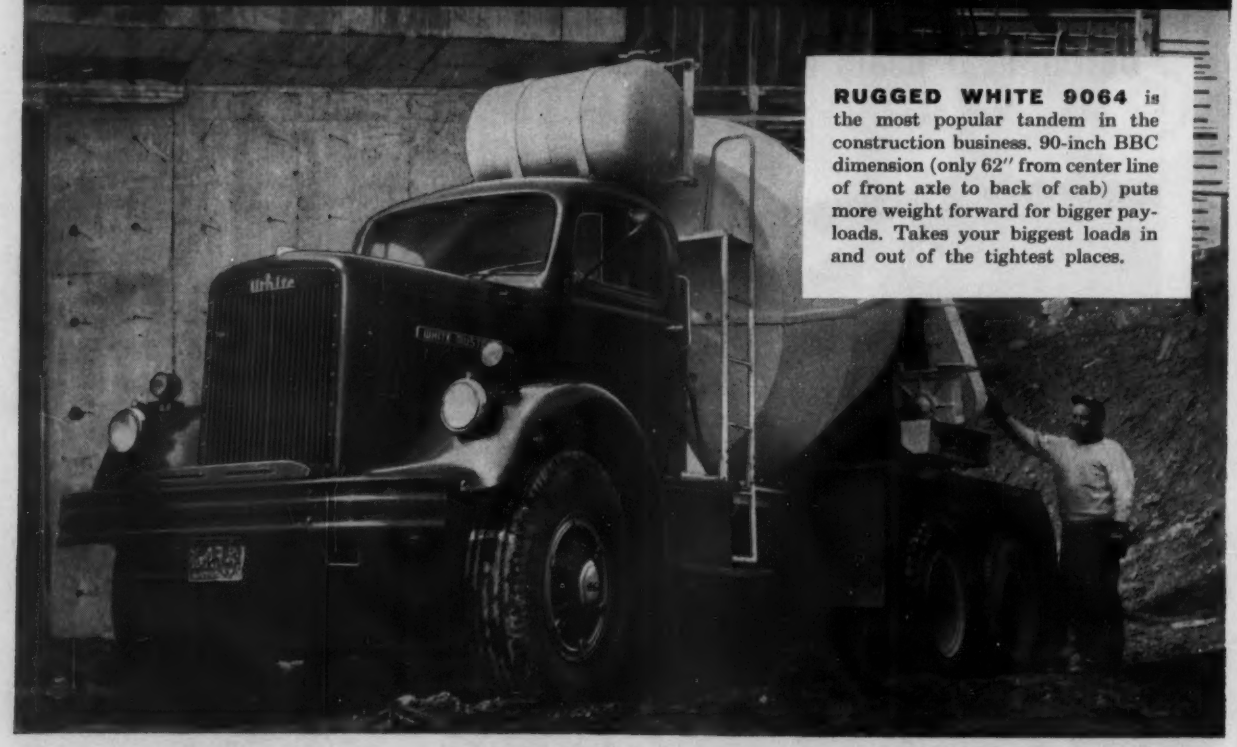
Cleaver Brooks®

ORIGINATOR AND LARGEST PRODUCER OF PACKAGED BOILERS



UNIQUE WHITE 6264, with engine mounted beside the half-cab, has shortest turning radius for greater maneuverability. High front-end loadings of up to 18,000 lbs., larger CA dimension for best weight distribution. Boost your payloads wherever you operate . . . as much as 6,270 pounds in certain states.

BUSINESS



RUGGED WHITE 9064 is the most popular tandem in the construction business. 90-inch BBC dimension (only 62" from center line of front axle to back of cab) puts more weight forward for bigger payloads. Takes your biggest loads in and out of the tightest places.

NEW WHITE 4264S tandems cost less to buy, less to operate, less to maintain. Heat-treated, alloy-steel frame, quality nut-and-bolt construction for durability, extra-capacity drive components. Choice of engine flywheel power take-off or provision for front engine mounted power take-off. Super-Mustang gasoline or Cummins "C" Series diesel engines.
BOOSTERS

designed by WHITE to do more work in less time... at lower cost

The construction industry demands trucks custom-engineered to fit the exact needs of each particular operation... trucks like the Whites shown here. Ask for a demonstration. The White Motor Company, Cleveland 1, Ohio. Branches, distributors and dealers in all principal cities.

WORLD LEADER IN HEAVY DUTY TRUCKS

WHITE TRUCKS

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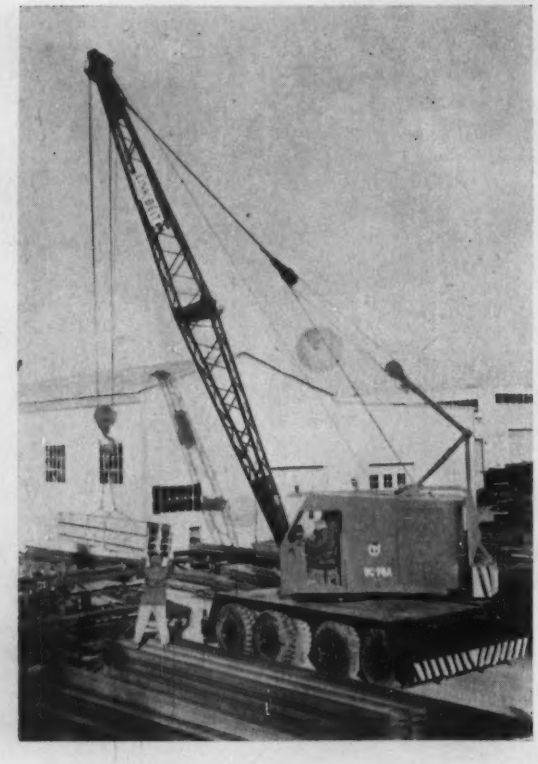


Self-Propelled Crane Rides on Four Axles

The UC-98A 35-ton self-propelled crane has a 33-ft turning radius and four speed ranges up to 7½ mph in both forward and reverse. The four-axle, rubber-tired carrier is 11 ft 1 in. wide. The front and rear double-box outriggers and sliding beams can be removed, and hydraulic outriggers are available.—Link-Belt Speeder Corp., 1201 Sixth St. S.W., Cedar Rapids, Iowa.

Circle 323 on Reader Service Card

Carrier Incorporates Hydraulic Lift

A pair of high pressure pumps provide the M600A straddle truck carrier with an all-hydraulic lift system. One pump powers the load lift and the other powers the shoe swing and steering of the 30-ton machine. Either of two transmissions is available: a transmission with five forward speed ranges or a system with a torque converter that provides four speed ranges forward and two in reverse. The carrier can be powered by either a 192-hp Continental 6-cylinder gasoline engine or a 172-hp Continental diesel. The M600A measures 18 ft 4 in. in length and can vary from 4 ft 10 in. to 6 ft 10 in. in width.—Hyster Co., P.O. Box 847, Danville, Ill.

Circle 324 on Reader Service Card

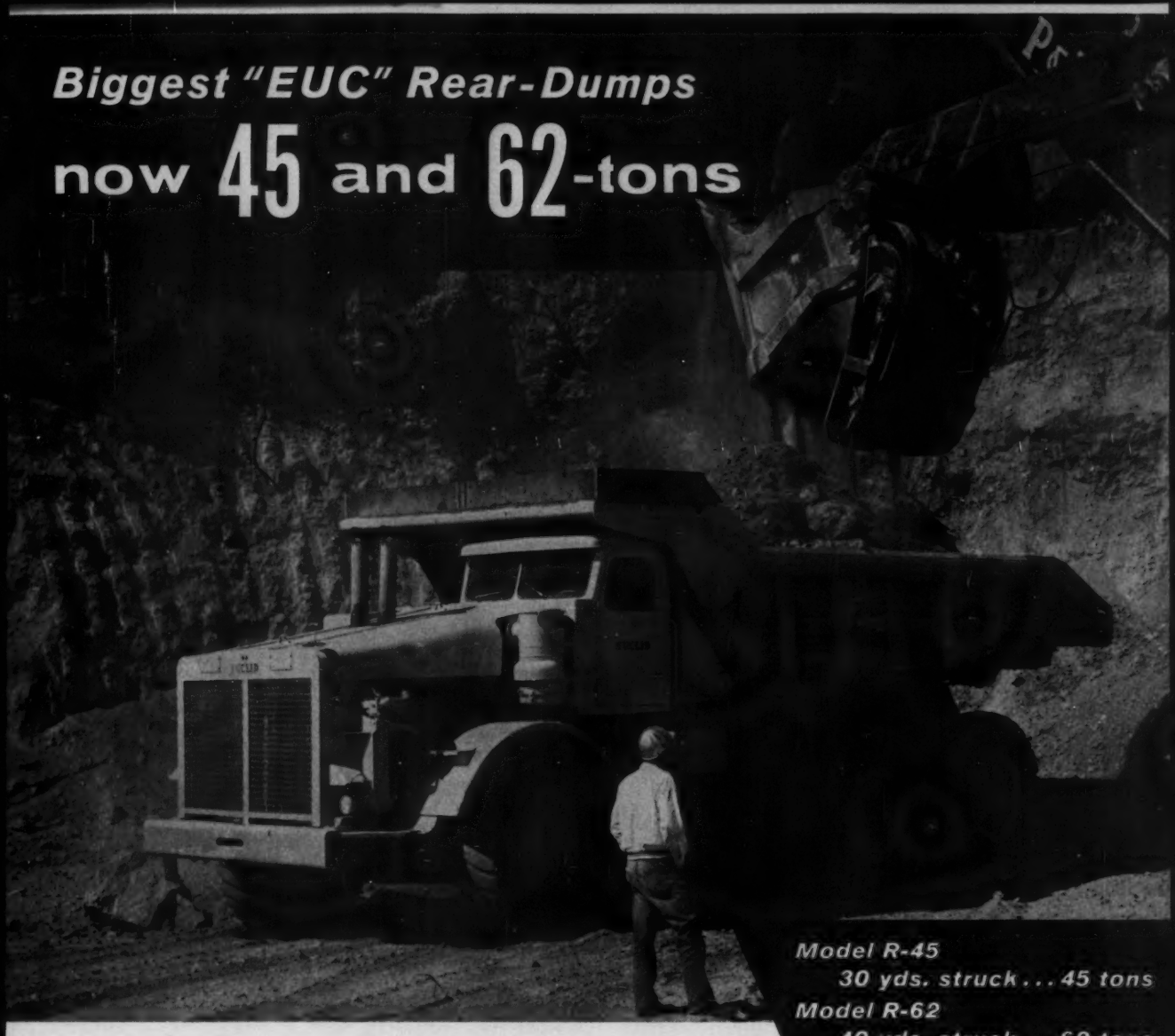
Small Truck Highlights Versatility

A 90-hp, four-cylinder Comanche engine powers the Scout, International Harvester's new all-purpose vehicle. Offered in two-wheel and four-wheel-drive models, the Scout includes a three-person passenger compartment with removable steel top, 5-ft long pickup body, fold-down windshield, removable door glass, and removable doors. A full-length one-piece Travel-Top, which encloses both the driver compartment and body, is optional. The length of each model is 12 ft 10 in. Prices begin at about $1,600.—International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.

Circle 325 on Reader Service Card

Biggest "EUC" Rear-Dumps

now 45 and 62-tons



Model R-45
30 yds. struck . . . 45 tons
Model R-62
40 yds. struck . . . 62 tons

Designed and built for heavy off-highway service in construction, mine, quarry and industrial work, Rear-Dump "Eucs" have paced the industry for over 25 years. Now rated capacities of the two biggest models have been increased to meet field demand for still larger payloads than before.

For work under large loading shovels on the big tonnage, big yardage jobs, check these Model R-45 and R-62 "Eucs". They have payload capacities of 90,000 and 124,000 pounds and replace the widely used 40 and 55-ton models in the Euclid line of rear-dumps.

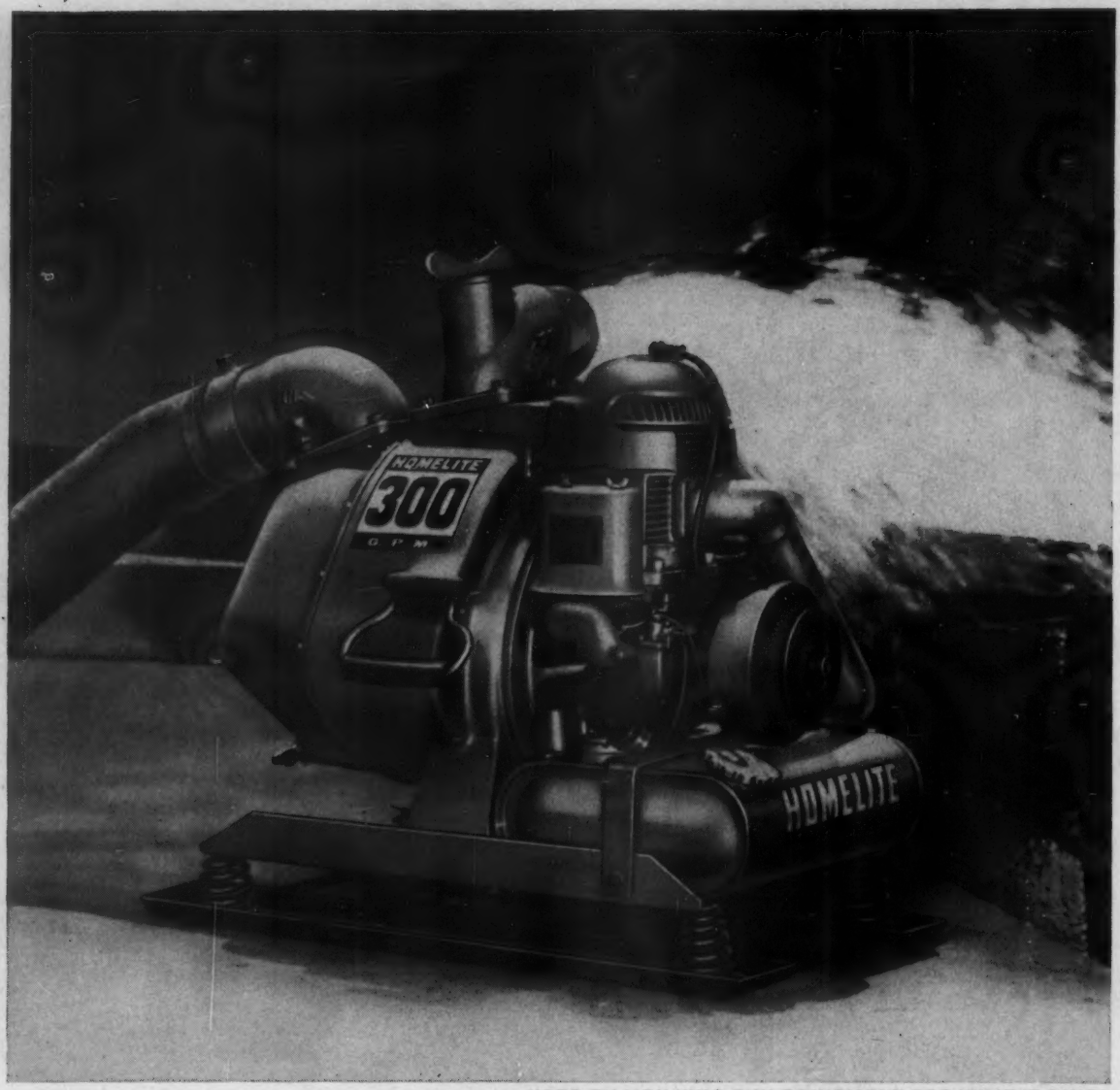
Use of high strength alloy steel for all body wearing surfaces cuts net weight and increases payload capacity . . . there's no compromise on the rugged durability and performance that "Eucs" are known for throughout the world. And, although they're new in size, both the R-45 and R-62 have years of job-proved dependability since they are of the same design and incorporate the same major components as the well-known models they supersede.

Have your Euclid dealer give you detailed information and show you how these big "Eucs" can cut your hauling costs. Euclid Division of General Motors, Hudson, Ohio

GM GENERAL MOTORS EUCLID

EUCLID

DIVISION OF GENERAL MOTORS, HUDSON, OHIO
Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland



USED BY MEN WHO BUY EQUIPMENT FOR WHAT IT SAVES

The Pump That's Measured In Minutes

This pump is called the Homelite "300" Pump for a very good reason. In addition to fast self-priming, guaranteed 28 ft. suction lift, non-clogging design, and extra long life ceramic coated seal, this pump handles 300 gallons per minute . . . 18000 gallons per hour. It does the job in minutes. And, it gets to the job in minutes. It's compact, lightweight and can be carried easily to any pumping location.

All Homelite Pumps, from the top quality 2-cycle engine driven pumps down through the new, economy-priced 4-cycle engine driven units are noted for their dependable performance. Just ask for an on-your-job demonstration. With action-filled demonstrations, all the superior, buying features of Homelite Pumps can be measured in a matter of minutes.

Homelitefactorybranches are located throughout the country. Your nearest one is as close as your phone. Call them or write for convincing demonstration or rapid service in any way.

HOMELITE
CARRYABLE
PUMPS GENERATORS • BLOWERS CHAIN SAWS

HOMELITE • A DIVISION OF TEXTRON INC. • 1003 RIVERDALE AVE., PORT CHESTER, NEW YORK • IN CANADA — TERRY MACHINERY CO., LTD.

Circle 193 on Reader Service Card *Circle 194 on Reader Service Card*

EQUIPMENT NEWS...

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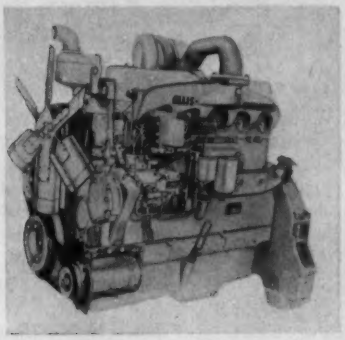

Diesel Engines

Allis Chalmers has added the 145-hp naturally aspirated Model 10000 and the 210-hp turbo-charged Model 11000 to its line of diesel engines. The models have six cylinders and have a single plunger pump that times and meters fuel injection. The 10000 and 11000 models are available as either open or closed power units, as off-highway engines, as packaged torque converter units, or for diesel electric sets.—Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Circle 326 on Reader Service Card

Machine Lays 24-In. Curbs

The High Curber lays concrete or asphalt curbs from 12 to 24 in. high without forms. The machine can negotiate a contour, move up or down grade, and turn a 12-ft radius curve. A 12-hp Wisconsin engine powers the High Curber.—Power Curbers, Salsbury, N. C.

Circle 327 on Reader Service Card

Rubber Blasting Mats

The Bombproof blasting mat is made of sliced-up auto tire casings woven together with steel cables to form a thick, resilient covering. The mat offers extra protection against flying rock because of its natural resiliency and weight. A 10x12-ft mat weighs about 2,400 lb. Available in 6x10-ft, 10x12-ft, and 10x15-ft sizes, the mats cost about $2.00 a sq ft.—O. B. Wasbotten & Sons, 1609 Arrowhead Rd., Duluth 11, Minn.

Circle 328 on Reader Service Card

Ditcher

Smallest ditcher of the Vermeer line, the W-1 Pow-R-Ditcher digs up to 8 in. wide and is designed for laying service and electrical lines. The unit has four-wheel drive on 4.00x8 tires and can be equipped with crawler tracks. Ejector paddles allow dirt to be neatly deposited on both sides of the ditch.—Vermeer Mfg. Co., Pella, Iowa.

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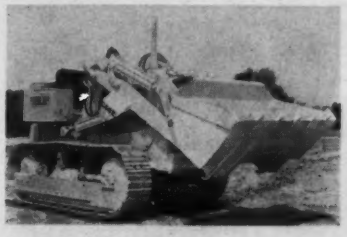

Crawler Tractor

Powered by a 72-hp diesel engine, the Model 750 crawler tractor is equipped with Case's Terromatic transmission, hydraulic controls, and a torque converter. The tractor produces a 23,000-lb drawbar pull and an 11,200-lb breakout force. It can be fitted with a 1⅜—yd loader bucket that will lift 16,000 lb.—J. I. Case, Racine, Wis.

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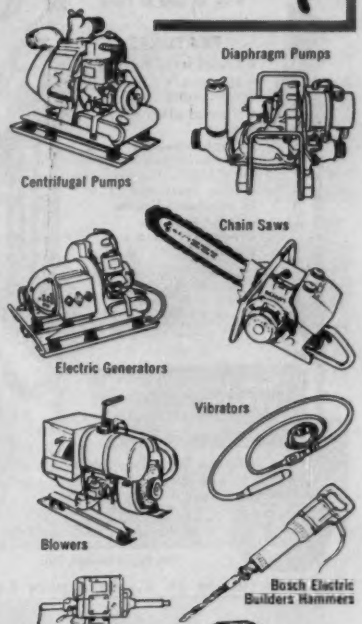
HOMELITE Factory Branches throughout the country sell and service Homelite's complete line of carryable construction equipment.



HOMELITE FACTORY BRANCHES

EAST: CONNECTICUT: Greenwich, Hartford • NEW JERSEY: North Arlington, Woodbridge • NEW YORK: Albany (Latham), Buffalo, New York (North Arlington, N. J.), Rochester, Syracuse • MAINE: Orono • MARYLAND: Baltimore • MASSACHUSETTS: Boston (Allston) • PENNSYLVANIA: Altoona, Erie, Harrisburg, Hazleton, Philadelphia, Pittsburgh, Malvern • VIRGINIA: Arlington, Richmond, Roanoke • WEST VIRGINIA: Charleston, Clarksburg

SOUTH: GEORGIA: Atlanta • FLORIDA: Jacksonville, Miami • LOUISIANA: New Orleans (Metairie), Shreveport (Bossier City) • NORTH CAROLINA: Charlotte, Raleigh • OKLAHOMA: Oklahoma City • TENNESSEE: Knoxville, Memphis • TEXAS: Dallas, Lufkin

MID-WEST: ILLINOIS: Chicago (Stone Park) • INDIANA: Indianapolis • MICHIGAN: Detroit, Grand Rapids • MINNESOTA: St. Paul • MISSOURI: Kansas City, St. Louis • NEBRASKA: Omaha • OHIO: Cincinnati, Cleveland, Toledo • WISCONSIN: Milwaukee

WEST: CALIFORNIA: Fresno, Los Angeles (Alhambra), Sacramento, San Francisco • COLORADO: Denver • OREGON: Portland • UTAH: Salt Lake City • WASHINGTON: Seattle, Spokane

HOMELITE

A DIVISION OF TEXTRON INC.

1003 Riverdale Ave., Port Chester, New York

In Canada:

TERRY MACHINERY CO. LTD.

NEW 3/4-ton Pull-A-Way
Added to WRIGHT TYPE "C" LINE!

FOUR SIZES • ¾, 1½, 3 and 6 Tons

FEATURES
- Lubricated for life
- Hooks are drop-forged
- Special alloy-steel chains
- Chain sheaves of drop-forged alloy steel
- Gear teeth cut to precision limits
- Load brake is dependable and safe
- Weights: ¾-ton, 12½ lbs. 1½-ton, 23½ lbs. 3-ton, 36½ lbs. 6-ton, 63 lbs.

New 3/4-ton model
• VERSATILE
• LIGHTWEIGHT

ACCO

Write to York, Pa., office for complete information

Wright Hoist Division
AMERICAN CHAIN & CABLE
York, Pa., Bridgeport, Conn.

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INCREASED PROFITS with EFCO FORMS

- Save time, material, money.
- Steel faces assure lifetime service.
- Easy to handle and assemble.
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Firm Name.....
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City.....State.....

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EQUIPMENT NEWS...

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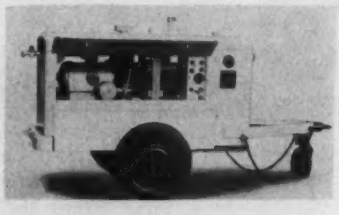

Diesel-Powered Rotary Air Compressor

The Model 125 RPD rotary air compressor is powered by a Hercules DD-198 diesel. The 2-wheel, 125-cfm compressor is 122 in. long, 65 in. wide, and 63 in. high. Standard equipment includes double tool boxes, adjustable cooling shutters, and a centralized instrument panel with hour meter. —Davey Compressor Co., Kent, Ohio.

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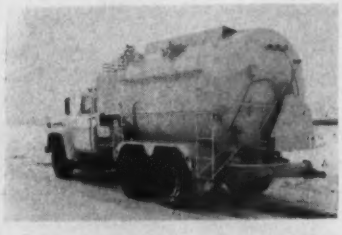

Cement Gunning Machine

The Pneumatcrete is a stationary central plant as well as a mobile cement gunning machine. The unit consists of a large pressurized tank with separate compartments for sand, cement, aggregate, and water. The steel shell also houses conveyors that feed the materials to the mixing chamber at the rear of the tank. The operator distributes the materials by electric controls located on the gunning nozzle.—Zimmerman Mfg. Co., Ephrata, Pa.

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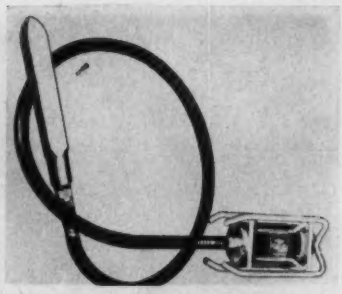

Vibrator With Flat Head

Wyco's new concrete vibrator has a square head, instead of the usual round type, based on the design principle that flat surfaces push more effectively than round surfaces. The vibrator is available in four sizes.—Wyzenbeek & Staff, Inc., 223 N. California Ave., Chicago 12, Ill.

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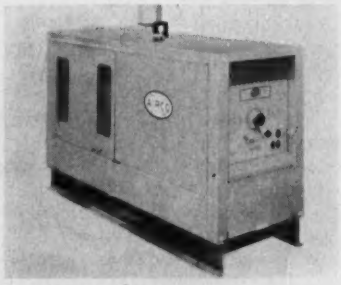

Engine Driven Welders

AIRCO has added three models to its line of engine driven welders. The 225-amp ac-dc unit, powered by a Kohler engine, can handle stick electrode welding, Heliwelding, and Aircomatic welding. The Yellow Jacket model is available in 300 and 400-amp sizes and is powered by a four-cylinder, four-cycle diesel engine. The third welder, rated at 250 amps, utilizes a four-cycle, three-cylinder diesel engine.—Air Reduction Sales Co., Div. of Air Reduction Co., Inc., 150 E. 42nd St., New York 17, N.Y.

Circle 334 on Reader Service Card

Dustless Air Drill Converts To Hammer

A combination air drill and hammer for placing concrete anchors is available in the Thor 15DLK drill kit. It includes a dust extractor that attaches to the drill and adaptors for concrete anchor sizes from ¼ to ¾ in.—Thor Power Tool Co., 175 N. State St., Aurora, Ill.

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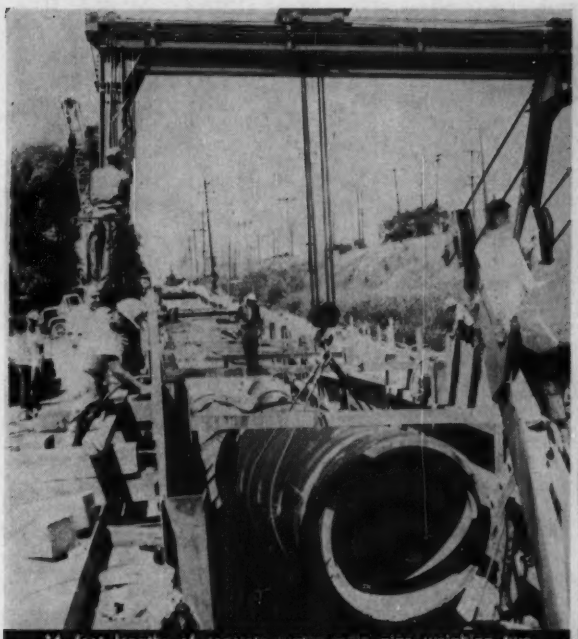
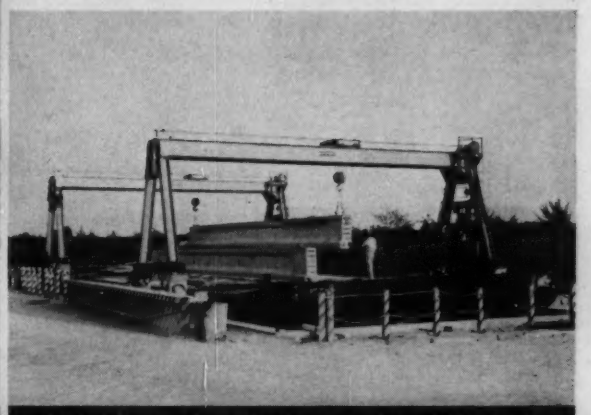
HAVE A HEAVY HANDLING PROBLEM?

Engineers who know are ... solving them with Travelift!



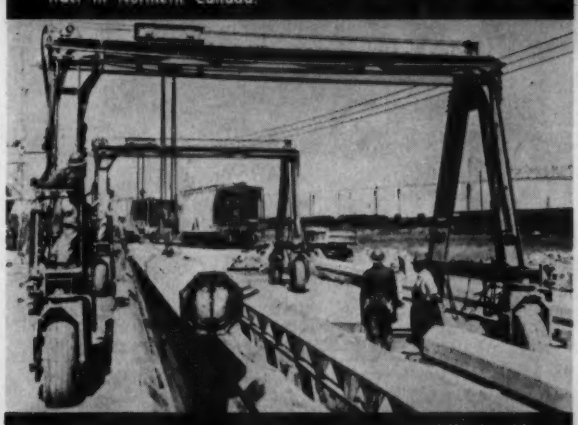
16 foot lengths of concrete water main pipe weighing two tons each, 7 feet in diameter are being lowered into 20 foot trenches by the versatile TRAVELIFT owned by W. Lazyniski in Milwaukee, Wisconsin.



Maule Industries, Miami, Florida use this team of TRAVELIFTS to load pre-stressed concrete beams on barges for delivery besides many other applications in their yard.

Mannix Construction found TRAVELIFT handy for laying rails and handling ties, on a 195 mile railway construction contract in Northern Canada.

Rumsey, Morrison, Knudsen, Seattle, Washington find TRAVELIFT quite indispensable in handling concrete pipe at their plant as well as pouring concrete.



Handling long pre-stressed concrete piling is not difficult with TRAVELIFT at Concrete Construction, Charleston, S. C. where this versatile carrier performs many other tasks.

Engineers all over the world have found *Travelift* ... The answer to many problems in handling ... Concrete Products ... Freight Containers ... Piggy Back Trailers ... Missiles ... Boats ... Tanks ... Steel Pipe and Beams ... Wire Cloth ... Concrete pipe. Let Travelift Engineers help you ...

MANY MODELS ... CAPACITIES FOR LIFTING PROBLEMS

Steering, lifting and propulsion of the *Self-Propelled* Travelift are by hydraulics ... Turning radius of this free-traveling lift is short, maneuverability excellent. Requires only one man to operate. 25 models in various capacities and types of lifting.

Travelift

WRITE DEPT. CM

STURGEON BAY, WISCONSIN

A DIVISION OF DROTT MANUFACTURING CORPORATION

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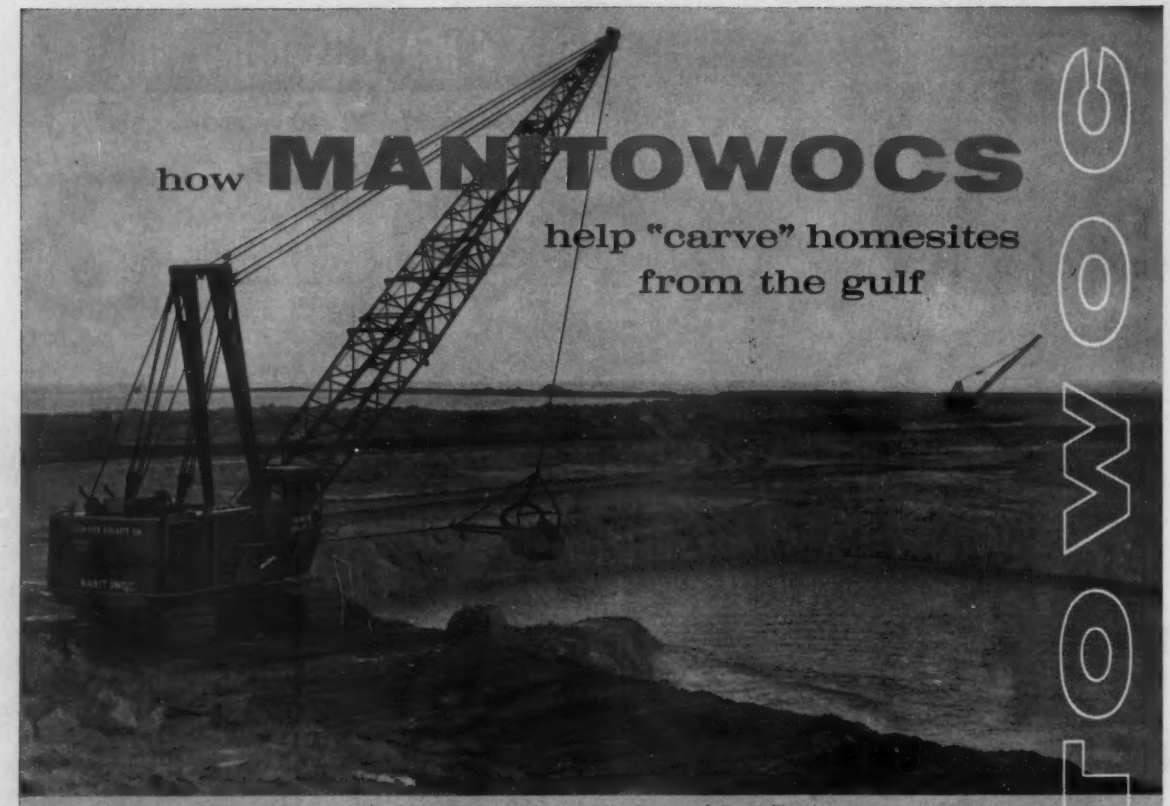

how MANITOWOCS help "carve" homesites from the gulf

MANITOWOC

Manitowoc 5-yd. dragline dredging canal at site of large Florida real estate development. In the background is a 4-yd. Manitowoc.

Acres of land are being moved into the sea on the West coast of Florida for the construction of a huge new real estate development. Contractor for the massive reclamation job — over 3200 acres are involved, 75% to be built into the Gulf of Mexico — is the Sumner Sollitt Co. of Chicago, under contract to the Flor-A-Mar Development Corp.

In the first step of construction dikes are built 30 feet wide and 15 feet above the high tide level. Two parallel dikes extend straight into the Gulf for about one mile, and half-a-mile apart. A third dike seals off the enclosure except for a sluice through which most of the water drains at low tide. Immediately after draining, the sluice is closed off and the remaining water pumped out.

Among the equipment on the job are a Manitowoc Model 4500 dragline with a 5-yd. bucket and 140 feet of boom, and a Model 3900 using 80 feet of boom with a 4-yd. bucket. Besides being used for dike construction, both machines excavate material for homesites within the dike perimeter and dig canals 100 to 200 feet wide and 10 to 30 feet deep, providing each homesite with navigable water frontage. Canal routes are dynamited from the bottom of the Gulf, which is solid marl and limestone rock in this area. The 5-yd. Manitowoc moves up to 3000 yds. daily of this tough material, despite the hard digging and need for frequent machine moves. Doing identical work, the Manitowoc 3900 has also racked up an impressive output record.

On any size job a Manitowoc can produce outstanding yardage for *you*. A call to your distributor will bring full details on the complete line of Manitowoc excavators, cranes, and truck cranes.

2-P

Manitowoc

MANITOWOC ENGINEERING CORP.
(A subsidiary of The Manitowoc Company, Inc.)
Manitowoc, Wisconsin

SHOVELS	CRANES	DRAGLINES	TRENCH HOES
1¼ — 6 YDS.	25 — 125 TONS	1¼ — 7 YDS.	1¼ — 3 YDS.

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EQUIPMENT NEWS...

Portable Masonry

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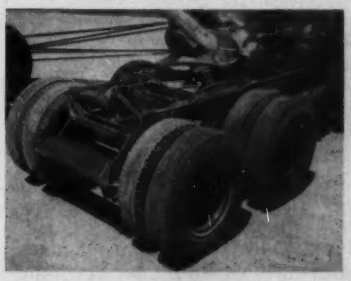

Axle Converts Single-Axle Tractors Into Tandems

This retractable axle transforms a single-axle tractor into a tandem unit. A complete, fully loaded bearing axle, the unit is mounted so that it distributes the load upon the tractor frame. Air-lift cylinders pick the axle up off the road when the unit is lightly loaded or on an empty return run. The axle can be regulated to carry from 5,000 to 25,000 lb. — Clement-Braswell, Inc., P.O. Box 696, Minden, La.

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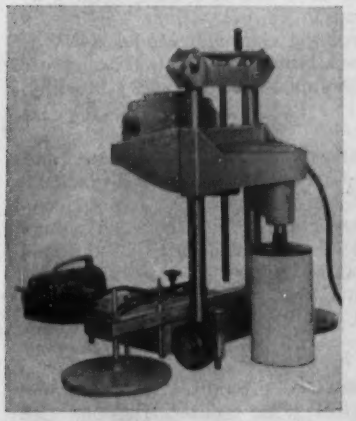

Portable Masonry Drilling Machine

Holes from 1 in. to 10 in. dia can be drilled vertically or horizontally in reinforced concrete with the Model K-500 Versadrill. Powered by a 5-hp electric motor, the portable machine has four spindle speeds. Positioned on its side on four legs that attach to clamps on the frame, the machine can drill through walls.—Kor-It Co., 991 Richard, Santa Clara, Calif.

Circle 337 on Reader Service Card

THE IROQUOIS DAM... AN S&H FOUNDATION INVESTIGATION & PRESSURE GROUTING PROJECT

Thousands of feet of drilling and sampling were performed for the initial planning of the Iroquois Dam (St. Lawrence Seaway). The accurate soil samples and high quality rock cores recovered contributed materially to the design of a suitable and firm foundation.

In the second phase of our work on the Iroquois Dam we drilled the necessary grout-holes and performed the pressure grouting. Completely sealing off the cavities that our drilling revealed required the injection of over 10,000 cu. ft. of cement grout.

Sprague & Henwood's unbeatable combination of experienced drilling and grouting personnel, modern equipment and expert supervision is your assurance of the satisfactory completion of your work.

For the foundation investigation and pressure grouting required for tunnels, buildings, dams, bridges, or highways, contact the Sprague & Henwood branch nearest you.

SPRAGUE & HENWOOD, Inc. S&H

SCRANTON 2, PA.

New York—Philadelphia—Nashville—Pittsburgh—Grand Junction, Colo.—Tucson—Buchans, Nfld.

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Save TIME and DOLLARS with

"INSTANT 2-WAY RADIO CONTACT"

Talk and Listen Instantly to Your Men "On the Job"

New 2-way radio actually fits into your pocket. Exclusive, rechargeable battery lasts year or more. Range—½ to 1 mile. No license required.

GLOBE ELECTRONICS

Pocketphone

THE FINEST 2-WAY RADIO AVAILABLE TODAY

Ideal for office, factory, stores, surveying, construction, sports, recreation, home. Finest quality available. Makes handy paging system. Use with Globe Electronics CB-100A or CB-200 for longer range systems. • Actual size — 1⅝" x 2¾" x 6¼" • Weight – 13 oz. • High impact Cycolac case • All Transistorized. $125.00 each

FOR LONGER RANGE COMMUNICATION

CITIZENS BROADCASTER CB-100A... Complete 3-channel, 2-way station. Fixed or mobile installation. Easy to install, operate. Range 5-15 miles. $139.95 each

BROADCASTER DELUXE CB-200... A rugged transceiver for commercial use. Transmits on 5 channels. Receives on all 22. Adapts to selective calling system. $189.95 each

CLIP AND MAIL COUPON TODAY FOR INFORMATION

GLOBE ELECTRONICS
A Division of Textron Electronics, Inc.
22-30 So. 34th St., Council Bluffs, Iowa

Please send me complete information on the new Globe Electronics ☐ Pocketphone ☐ CB-100A ☐ CB-200

CM-3

NAME_____

ADDRESS_____

CITY_____ STATE_____

Circle 303 on Reader Service Card

Ease the profit squeeze

with a handy PAYLOADER®

Versatile tractor-shovel performs 3 operations

At a million dollar high school construction project, this H-30 PAYLOADER *loads* excess dirt and *backfills* with its 1-cu. yd. bucket ... it also installs a good share of the 6,000-cu. yds. of *trenches* required with its rear mounted back hoe. NET RESULT: One operator and this multiple-duty PAYLOADER saves dollars in labor every day *plus* the added cost of maintaining several single-purpose machines.

The 4-wheel-drive Model H-30 PAYLOADER is a natural for any construction, maintenance or repair project. Compact in size and modest in price, it features the latest improvements of larger PAYLOADER units. Its advantages in performance, safety and operation are not found in any comparable machine. Check these features:

CAPACITY — 3,000-lb. operating capacity; 1-cu. yd. bucket; 8'-4" dumping clearance and 29" reach ahead of tires.

OPERATING EASE — Power steering; full power-shift transmission with torque converter; sealed hydraulic brakes on all 4 wheels.

POWER AND TRACTION — 6-cyl., 77½-h.p. gas engine to handle peak loads; 4-wheel drive with 3 forward and 3 reverse speeds up to 25.7 mph.; shifts in either direction made "on-the-go", no foot clutching.

FORK LIFT TRACTOR handles 6,000-lb. loads up to 21' height. 4-wheel drive, power steering, power shift transmission, 4-wheel hydraulic brakes.

To learn more about the cost-cutting uses of PAYLOADER tractor-shovels, their sizes (there are 8, up to 12,000-lb. operating capacity) and interchangeable attachments that best fit your needs, contact a Hough Distributor nearby, or return the coupon.

HOUGH®

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY - INTERNATIONAL HARVESTER COMPANY

THE FRANK G. HOUGH CO.
706 Sunnyside Ave., Libertyville, Ill.
☐ Send data on new H-30 PAYLOADER
☐ Send data on fork lift tractor

Name _____ Title _____
Company _____ Street _____
City _____
State _____

AB 1-B-5

Circle 200 on Reader Service Card

New Product Briefs

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

ONE-MAN TAMPER powered by a four-cycle gasoline engine has been added to the Jay line. A light-weight ram-type machine, the Jay-Ram Tamper is particularly suitable for clay soils. — Leukart Machine.

Circle 338 on Reader Service Card

REVERSE ALARM is a mechanical back-up warning device that mounts on moving equipment. The directional Bull Horn signals even when the motor is not running and requires no maintenance.—E. D. Bullard.

Circle 339 on Reader Service Card

EXPLOSIONPROOF PLUGS are for connection of power distribution systems in hazardous areas. Industiline plugs and receptacles may be used with four-wire circuits rated to 240 v., 15 amps. — Nottingham.

Circle 340 on Reader Service Card

AFTERCOOLER built for capacities of 50 to 120 cfm comes in lengths up to 95 in. with a 4½-in.-dia cooling chamber. Model A4VC is available with optional automatic cooling water shut-off.—Murphy.

Circle 341 on Reader Service Card

END-DUMP TRAILER for pit and quarry work carries 70-ton payload. Made of heavy plate construction with reinforced ribbed sides, the Stabilift is equipped with 100,000-lb-capacity axles and suspension. — Challenge-Cook.

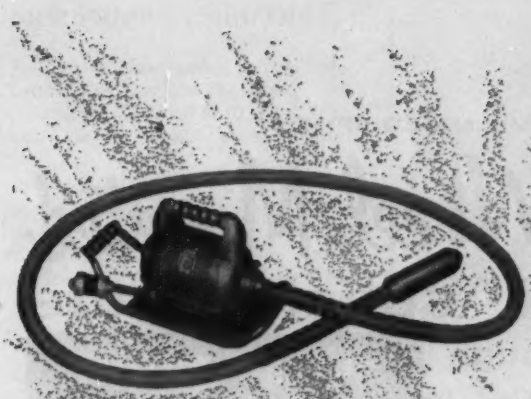
Circle 342 on Reader Service Card

BALLAST provides road equipment tires with greater traction. Led Ballast aerates in a tire, causing expansion; then it has the ability to absorb shock within the tire at point of impact.—Led Ballast.

Circle 343 on Reader Service Card

SPACE HEATER produces up to 200,000 Btu with liquid petroleum or natural gas. Priced at $99.50, the Solar-Jet is equipped with pressure gauge, regulator, and adjustable heat control. — Dahl-Son.

Circle 344 on Reader Service Card



VIBRATORS

ROTO-TROWELS

STOW

for DEPENDABLE CONCRETE CONSTRUCTION EQUIPMENT

Into each unit of STOW-built construction equipment goes years of research in the field, months of testing new designs on the job, plus 80 years of STOW engineering know-how. STOW maintains close contact with contractors, keeping abreast of their current problems . . . incorporating their needs into the STOW line of construction equipment.

Every day more contractors rely on STOW Concrete Construction Equipment for the dependable service and the performance today's contracts demand.

When you order concrete construction equipment, specify STOW, for top performance *without* expensive maintenance.

Look up your nearest STOW distributor under "Concrete Vibrators" in the yellow section of the telephone directory.

GRINDERS

VIBRATING SCREEDS

STOW

MAIL THIS COUPON

TODAY!

Stow Manufacturing Co., Dept. I-1
31 Shear Street, Binghamton, N. Y.

I'm interested in the STOW LINE of Concrete Construction Equipment. Send complete catalog and name of nearest distributor. I am particularly interested in _____

Name _____ Title _____

Company _____

Street _____

City _____ State _____

Circle 201 on Reader Service Card

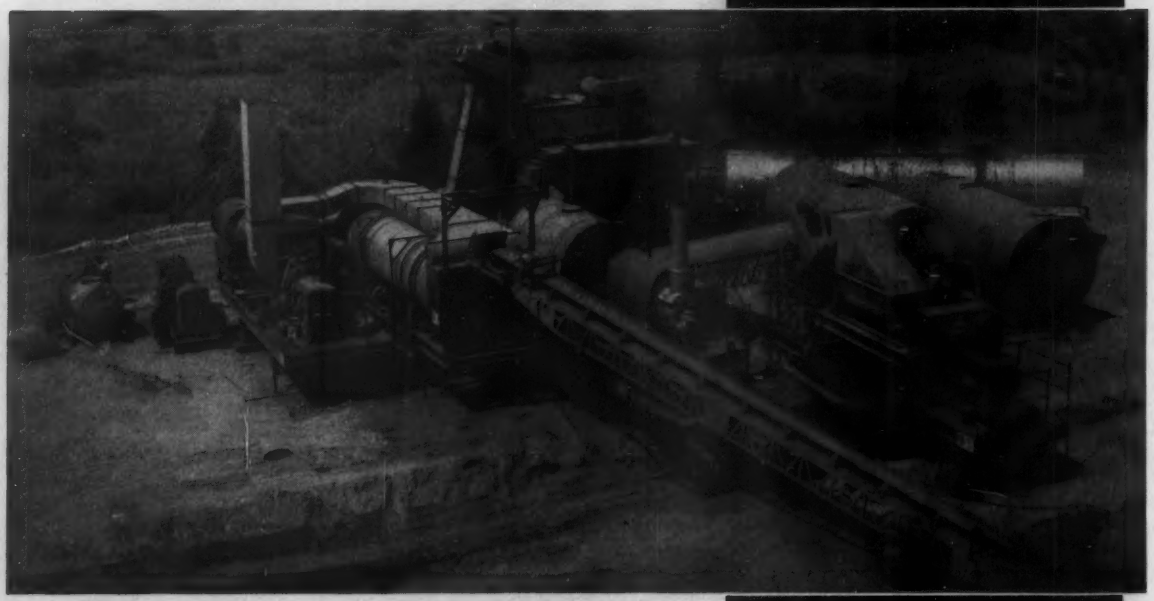
AMERICA'S FIRST BUILDERS OF ASPHALT MIXING EQUIPMENT

H&B
ESTABLISHED 1867

Completely Wheel Mounted Batch-Type Asphalt Plants

from 1,000 lbs. through 6,000 lbs. capacity.

*Larger Mixers Available



REDUCED MOVING TIME = INCREASED PROFITS

MODEL NUMBER	BATCH RATING	DRYER DIMENSIONS
M-10	1000 lbs.	42" dia. x 16' long
M-20	2000 lbs.	60" dia. x 20' long
M-30	3000 lbs.	70" dia. x 24' long
M-40	4000 lbs.	76" dia. x 30' long
M-50	5000 lbs.	88" dia. x 30' long
M-60	6000 lbs.	100" dia. x 30' long

*H&B will build *ANY* size plant designed to produce at 80 batch-per-hour capacity!

HETHERINGTON & BERNER INC. *Engineers • Manufacturers*

A Wholly Owned Subsidiary of American Hoist & Derrick Co.

701 KENTUCKY AVENUE • INDIANAPOLIS 7, INDIANA

Export Dept: 205 W. Wacker Drive, Chicago 6, Illinois *Cable Address:* Panmakina

Circle 202 on Reader Service Card

NEW PRODUCT BRIEFS

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

STEAM CLEANER with a dual-piston pump delivers full volume of water regardless of operating pressure. Three models of the Iron Horse cleaner have capacities of 60, 100, and 120 gph—Choldun Mfg.

Circle 345 *on Reader Service Card*

DIESEL ENGINE developing 77 hp at 2,200 rpm now is available as a commercial power plant. In the past, the D-262 engine was standard equipment on graders and tractor shovels.—Allis-Chalmers.

Circle 346 *on Reader Service Card*

UTILITY PUMPS with either gasoline engines or electric motors deliver 3,200 gph with pressures of 60 psi. The self-priming centrifugal pumps have 1¼-in. inlets and 1-in. outlets. —Barnes Mfg.

Circle 347 *on Reader Service Card*

ELECTRIC PLANTS powered by Wisconsin air-cooled gasoline engines are rated at 12,000 w ac and produce 115/230-v, 60-cycle current. Remote controlled starters are standard equipment.—Wincharger.

Circle 348 *on Reader Service Card*

SALAMANDERS burn LP gas and deliver from 40,000 to 150,000 Btu. The Series 2000 units are 27½ in. high, 19½ in. wide, and weigh 26 lb. All have automatic shut-off valves for safety.—Weldit, Inc.

Circle 349 *on Reader Service Card*

TWO-WAY RADIO has seven transistors and includes a 3-in. speaker-mike. The Ree-Mar 100 Transceiver operates 50 hr on a 9-v rechargeable battery and has a range of 1 mi.—Rae-Mar Electronics.

Circle 350 *on Reader Service Card*

BUCKETS for Hough Payloaders now are available in a 4-yd size for the Model H-120 and a 1-yd size for Model H-30. Both of these buckets are of the patented Drott 4-in-1 design.—Frank G. Hough.

Circle 351 *on Reader Service Card*

TWO-WAY RADIO base station line includes a 300-w transmitter and a table top unit that provides 25w when operating on 144-174-mc frequencies and 30 w when used on 25-54-mc frequencies.—Motorola.

Circle 352 *on Reader Service Card*

The Only Shovels Engineered for Construction Work

Our Razor-Back and Razor-Lite shovels are forged with an extra-strong (13 gauge) center backbone that extends from the *top of the socket all the way to the cutting edge.* To lighten their weight, our blades are tapered thinner *at the sides,* where shovels never wear out. *Give more service per dollar than any other contractor's shovel. The only shovels "fully guaranteed" in writing.*

2 Types to Fit Your Need . . . Order From Your Regular Supplier:

RAZOR · BACK®
For Big Loads and Super-Strength

RAZOR · LITE®
Strongest and Lightest Lightweight Shovel

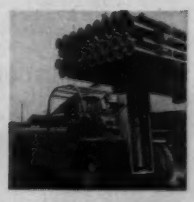
THE UNION FORK & HOE COMPANY, Columbus 15, Ohio

Circle 203 *on Reader Service Card*

CONTINENTAL MOTORS — Powering the Nation — AMERICA'S STANDARD

"PRECISE POWER"
FOR EVERY CONSTRUCTION JOB

The name Continental has real dollars-and-cents meaning for users of specialized power—and for dealers who sell Continental-powered equipment. Among the many reasons are the broad diversification of the Red Seal line—one or more engines with exactly the right characteristics for virtually every construction job—and the fact that after-the-sale service is making them first choice for an ever-widening list of jobs in the building industry—wherever power is required.



Continental Motors Corporation
MUSKEGON · MICHIGAN

ESTABLISHED SERVICE FACILITIES ALL OVER THE WORLD

Circle 304 *on Reader Service Card*

LOOKING for the RIGHT CUTTER for those IMPOSSIBLE METAL CUTTING Jobs!

Here's the Curtain-Raiser to a Quick Solution!

HKP
PORTER CUTTERS

There's a HAND or HYDRAULIC powered PORTER CUTTER to answer your toughest metal-cutting problems — over 100 different cutters, all designed to save you time, labor, and money! Make short work of cutting:

• Bolts • Rods • Screws • Rivets • Wire • Chain • Steel Strapping • Soft, Medium & Hard Metals & Many Others

CUT LABOR COSTS UP TO 97%

The famous PORTER CENTER-CUT CUTTER . . . our most popular tool . . . is the leading all-around cutter for industrial use! For Free Cutting of Soft and Medium Hard Metals up to ¾". Available in 6 sizes.

. . . and for "PRODUCTION" CUTTING

The PORTER WORK-STATION CUTTER can increase one man's output up to 300% in continuous volume cutting! In 3 sizes — up to ½" capacity!

ALSO . . . for those RUGGED JOBS!

The PORTER HEAVY DUTY CUTTER cuts almost anything in metal up to ¾" diameter — thanks to its heat-treated, hard-tempered center-cut jaws! Comes in 3 sizes.

Contact your Industrial Distributor . . . or write for your free catalog with illustrated, detailed descriptions of the versatile PORTER line!

CUT up to ¾" rods with HAND OPERATED TOOLS — up to 1⅜" rods and 2½" power cable with POWER OPERATED TOOLS.

H. K. PORTER, inc.
Somerville 43 Mass

Circle 204 on Reader Service Card

EQUIPMENT BRIEFS . . .

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

WARNING LIGHT produces 1/10-sec flashes 65 times per min, works for 400 hr. The No. 610-FS Dietz Visi-Flash has a 4-in. lens and a 30-in. chain for securing it in place to prevent theft.—Dietz.

Circle 353 on Reader Service Card

SAW SHARPENER handles circular saw blades, including carbide tipped saws, with diameters from 4 to 24 in. The E-Z-Sharp is electrically powered and portable for use at the job site. — Easysharp Corp.

Circle 354 on Reader Service Card

BLOWERS for unloading bulk material provide air at pressures up to 20 psig. Model A5CDL9, driven by pto, has 300-500-cfm capacity. Model A5CDL12 is driven by a 50-hp gasoline engine. — Cyclo-Blower.

Circle 355 on Reader Service Card

SOIL STABILIZER helps compact material by electrochemical action. One gal of Kompactor mixed with 1,000 gal of water treats 5,000 to 10,000 sq ft, depending on soil conditions. — Central-Reynolds.

Circle 356 on Reader Service Card

STEAM CLEANER delivers 200 gal of high-impact vapor solution an hr. Equipped with automatic remote control, the Clean-Master 200 is available in natural gas, LPG, and oil-fired models—Clayton.

Circle 357 on Reader Service Card

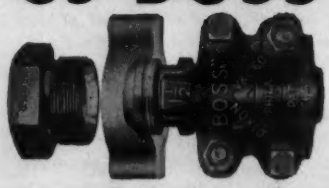
ELECTRIC DRILLS are available in two sizes: ¼-in. Model 70 that sells for $32.50 and ⅜-in. Model 76 priced at $42.50. The larger model features a 2.8-amp motor; the smaller a 2.5-amp motor.—Skil Corp.

Circle 358 on Reader Service Card

SPRAY BAR CONTROL maintains a constant height of the bar above the road regardless of the amount of asphalt in the tank. The Bar-Hite fits between the truck chassis springs and the spray bar. — Etnyre.

Circle 359 on Reader Service Card

"GJ-BOSS"



GROUND-JOINT FEMALE COUPLING, STYLE X-34

SO *Reliable* FOR PILE DRIVING

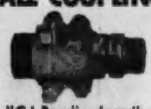
. . . AND ANY STEAM, AIR, WATER AND HYDRAULIC SERVICES . . .

HIGH OR LOW PRESSURE

Washerless

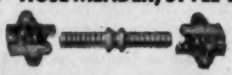
Unequalled for safety, efficiency and long service life. Ground-joint union between stem and spud provides leak-proof, trouble-free seal . . . no lost or worn-out washers to replace. All parts malleable iron or steel, rustproofed. Furnished with superstrong "Boss" Offset and Interlocking Clamps. Sizes ¼" to 6", inclusive.

COMPANION MALE COUPLING "BOSS" STYLE MX-16



Companion coupling for "GJ-Boss", described above, and "Boss" Washer Type Couplings Style W-16. Each size fits same size hose . . . oversize hose not required. Furnished with "Boss" Offset and Interlocking Clamp. Sizes ¼" to 6", inclusive.

"BOSS" HOSE MENDER, STYLE BM-16



The practical, safe way to restore damaged hose to service. Fitting consists of corrugated mender tube and two "Boss" Interlocking Clamps. Tube has flanges to engage clamp fingers. Thoroughly rustproofed. Sizes ½" to 6"

Stocked by Manufacturers and Distributors of Industrial Rubber Products

DIXON
Valve & Coupling Co.
GENERAL OFFICES & FACTORY—PHILADELPHIA 22, PA
BRANCHES—CHICAGO · BIRMINGHAM · LOS ANGELES · HOUSTON
DIXON VALVE & COUPLING CO., LTD., TORONTO, Associate Companies
Buck Iron Company, Inc., Quarryville, Pa. · Precision Drawn Steel Company, Camden, N. J.

Circle 305 on Reader Service Card

NEW MORE POWERFUL LE ROI 125 ROTARY

15% more hp and 60% power surplus assure capacity output... improve efficiency... and extend time between engine overhaul.

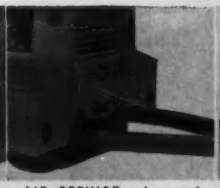
This new Le Roi 125 Rotary compressor guarantees full 125-cfm air supply whenever and wherever you need it. Thus, you can replace two smaller machines *and operators* with a single 125. And you don't have to waste a larger compressor on jobs where 125-cfm air supply is adequate.

Extra power enables the engine to deliver full capacity at only 1600 rpm — 150 to 400 rpm slower than other makes. This cuts wear on both engine and compressor parts and reduces upkeep. What's more, the use of Stellite exhaust valves and valve seat inserts and positive valve rotators in the engine improves fuel economy and extends valve life.

The new Le Roi 125 Rotary incorporates "double life" reversible rotors, a Le Roi exclusive. Spline couplings assure positive power transfer from engine to compressor and oil pump. Dump valve, minimum pressure orifice, low-oil-pressure cut-out switch, and thermo by-pass valve operate automatically, providing protection against down-time due to accident or neglect.

At 2190 lbs. dry weight, the Le Roi 125 is the lightest compressor in its class. It is designed for easy handling on the site and for fast inspection and servicing in the field. Gasoline and diesel models available on wheel mounts — and gasoline utility model for cross truck bed mounting. PC-101

MORE TOOL SPACE in lockable tool boxes on each side.



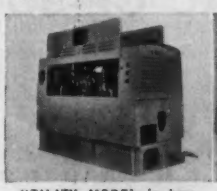
AIR SERVICE valves and hose connections are protected by tow bar.

LIFTING BAIL permits easy, safe overhead pickup.

PROTECTION against damage in transit assured by mounting radiator and oil cooler at tow-bar end.

REMOVABLE HOOD can easily be lifted off by two men after loosening just 8 cap screws.

OIL SEPARATOR is independent of the receiver and easily accessible for changing separator element.

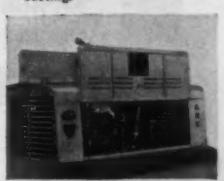


UTILITY MODEL is base mounted . . . all controls and service valves grouped for "curb-side" operation.

SWIVEL TOWING EYE is spring-loaded to ease towing strain over rough terrain and during acceleration.

STURDY THIRD WHEEL easily lifts out of way and locks for towing — no "knuckle-busting."

Ask your Le Roi Distributor for more information. Or write directly to us at the address below.



FOLDING PANELS lock up and out-of-the-way . . . aid operation and servicing.

LE ROI Division of Westinghouse Air Brake Co. Sidney, Ohio

WANTED

KILLER *Clay* COMPACTION JOBS

For Vibratory Sheepsfoot Roller

Compaction Time Cut 75% On Earth Fill Dam

Facts don't lie . . . one pass by a Dynapac, four passes for competition to meet specs. Which equipment would you rather have on your job? We're after the killer jobs, the kind where your profits go down the drain due to soil compaction problems. We will run against *any* compaction equipment. Let the Dynapac CF-30 prove itself on your job. Call your nearest distributor.

DYNAPAC CF-30

TEST DATA

PURPOSE OF TEST: Establish compaction specs for new earth fill dam.

AUTHORIZED BY: Municipal Water Co. — tests directed by prominent civil engineering firm.

EQUIPMENT: CF-30 vibratory sheepsfoot versus 5 x 5 sheepsfoot developing 1100 p.s.i.

LOCATION: Southern California

MATERIAL: Clay with 30% passing at 200 sieve.

RESULTS: 3 to 4 passes with vibratory sheepsfoot passed density test. 5 x 5 required 12 to 16 passes.

* Complete details available on request.

VIBRO-PLUS VB DYNAPAC

41-28

VIBRO-PLUS PRODUCTS, Inc.

STANHOPE, NEW JERSEY

WORLD'S LEADING MANUFACTURER OF VIBRATORY EQUIPMENT FOR OVER TWO DECADES.

Circle 206 on Reader Service Card

New Publications

These catalogs and bulletins from manufacturers contain useful information about construction equipment and materials. To obtain a copy of the items you want, circle the appropriate numbers on the READER SERVICE CARD just inside the back cover.

COMPRESSORS—Bulletin E-268 covers the Davey line of 125-cfm rotary compressors, which are available as skid-mounted utility models and as two-wheel trailers. —Davey Compressor Co., Kent, Ohio.

Circle 360 on Reader Service Card

PUMPS—A new 24-p. engineering manual contains indexed information, charts, and graphs dealing with pumping operations. —Marlow Pumps, Div. of Bell & Gossett Co., P.O. Box 200, Midland Park, N.J.

Circle 361 on Reader Service Card

TRACTOR — A 22-p. bulletin (TP-442) describes L-W's V-Power B Tournapull with a 430-hp GM engine. Loading of the 29-yd scraper and the L-W power-transfer differential are illustrated. Included is the use of the machine as a tandem unit capable of moving 58 yd of dirt per cycle. —Le Tourneau-Westinghouse Co., 2301 NE Adams St., Peoria, Ill.

Circle 362 on Reader Service Card

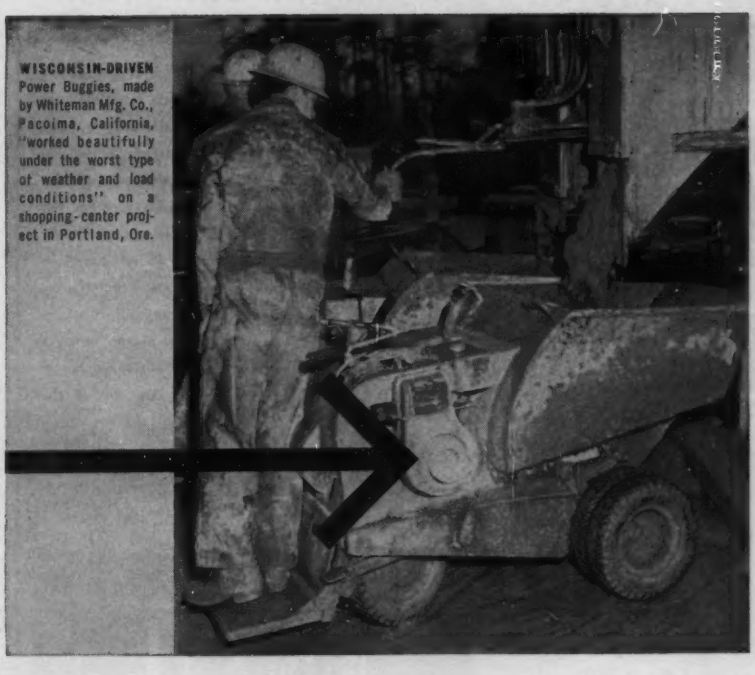
CRANE-EXCAVATORS — The Series 350 Bantam crane-excavator is covered in a 12-p. bulletin. Included are capacity charts and work ranges of the 11-ton, crawler-mounted Model C-350 and front end attachments and specifications on the line of six Bantam crane carriers. — Schield Bantam Co., Waverly, Iowa.

Circle 363 on Reader Service Card

BACKHOE—A 4-p. bulletin describes the Parsons-Shawnee 1500 backhoe, which has a 15-ft digging depth, 20-ft 8-in. reach, and 12½-ft dumping height.—Parsons Co., Newton, Iowa.

Circle 364 on Reader Service Card

CALCIUM CHLORIDE—A new brochure, "Calcium Chloride for Concrete Construction," explains how to accelerate the set of concrete. The literature contains charts on early compressive strength and tells how to prepare and use calcium chloride in stand-



WISCONSIN-DRIVEN Power Buggies, made by Whiteman Mfg. Co., Pacoima, California, "worked beautifully under the worst type of weather and load conditions" on a shopping-center project in Portland, Ore.

7-hp WISCONSINS defy foul weather and grueling pace

Hauling concrete under miserable winter conditions calls for truly rugged engines, like the single-cylinder Wisconsins on the Power Buggies shown above. The engines worked so well that the customer added several new Buggies to the fleet of 14 he used to keep this $21,000,000 shopping center project on schedule.

The 7-hp BKN Wisconsins are precision-built to stand up under the grueling power demands of tough, dirty jobs like this. Their high torque eases heavy loads into top speed — and moves them through mire and up grades without stalling the engines or work progress.

The BKN's slash upkeep. Thrust-absorbing tapered roller bearings on the forged-steel crankshaft virtually eliminate bearing failure. The high-tension magneto is weather-sealed — and is mounted outside for fast, easy access and servicing.

You'll be money ahead with equipment that is powered by heavy-duty Wisconsin Engines, 3 to 56 hp. Get Bulletin S-254. Write Dept. C-31.

WISCONSIN MOTOR CORPORATION
MILWAUKEE 46, WISCONSIN
World's Largest Builders of Heavy-Duty Air-Cooled Engines

Circle 207 on Reader Service Card

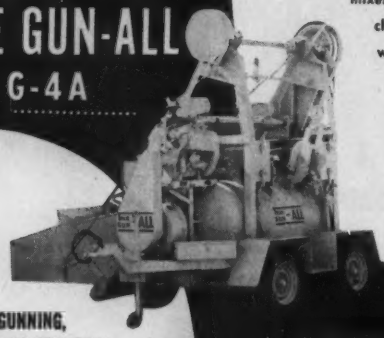
You give food and friendship with every $1 package you send to the world's hungry thru the CARE Food Crusade, New York

PORTABLE
COMMUNICATION
SYSTEM
• Field Proven for Industry
• No license required
• American Made
• Lightweight pocket size
• Range up to 1 mile Other units avail. for extended coverage.
• Low cost operation
$69.50 PER UNIT
USES • Construction • Surveying • Factories • Offices
TEN DAY MONEY BACK GUARANTEE
PLEASE ENCLOSE CHECK TO:
FANCY PRODUCTS CORP.
3861 Green Place Bethpage, N.Y.

Circle 306 on Reader Service Card

place 10 cubic yards of concrete per hour with TRUE GUN-ALL MODEL G-4A

The True Gun-All Model G-4A is a contractor's workhorse that shoots REAL concrete containing up to ¾" aggregate. It saves time and money by giving you higher production, letting you shoot a more economical mix and by eliminating costly double forming. The True Gun-All thoroughly and accurately mixes the concete in its self-contained chambers, doing away with guesswork by the nozzleman. This premixing reduces slump, rebound and dusting. The G-4A does its work with only a 365 cfm compressor. (Smaller models available)



BEST FOR GUNNING, CONVEYING OR GROUTING . . .

You can batch on the job or use a wet or dry transit mix . . .

Write for complete information Catalog No. GA30

TRUE GUN-ALL

a division of DETROIT TOOL ENGINEERING CO.

P. O. Box 232 Lebanon, Missouri

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do it speedily... accurately

Find out how Detecto can streamline your plant operation. Write to . .

DETECTO SCALES, INC., Dept Y-6

540 Park Ave., Brooklyn 5, N. Y.

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KATOLIGHT PORTABLE POWER PLANTS give your crews "plug-in" electricity anywhere, whenever it is wanted. Here is handy, dependable electric power to operate all types of power tools or to provide steady, bright flood lighting.

Standard sizes and models for every portable, standby or continuous use from 350 watts to 125 KW.

Special Units up to 750 KVA to meet specific requirements.

With instant, dependable Katolight power on the job, work speeds up . . . costs go down!

Write Today for Details!

KATOLIGHT CORPORATION

Box 891-106 MANKATO, MINNESOTA

Circle 308 *on Reader Service Card*

NEW PUBLICATIONS . . .

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

ard solution.—Calcium Chloride Institute, 909 Ring Building, Washington 6, D.C.

Circle 365 *on Reader Service Card*

FINISHER—Bulletin CF 100 describes a concrete finisher that is power self-widening from 12 to 28 ft and is operated by electric push buttons and hydraulic levers. —Sales Promotion Dept., Blaw-Knox Co., Construction Equipment Div., Mattoon, Ill.

Circle 366 *on Reader Service Card*

TRANSIT MIXER — The line of BuKaneer transit mixers, which range from 4 to 10 yd, are featured in a bulletin. The units are available with fly wheel power take-off, front engine power take-off, and separate engine power trains. — Sales Promotion Dept., Blaw-Knox Co., Construction Equipment Div., Mattoon, Ill.

Circle 367 *on Reader Service Card*

WELDING AWARD — A 20-p. booklet contains the details of Lincoln's $25,000 award program for progress in welded design.— The James F. Lincoln Arc Welding Foundation, Cleveland, Ohio.

Circle 368 *on Reader Service Card*

CONSTRUCTION PRODUCTS— Information on the Trac-Newmatic blast-hole drill, stationary compressors, the Tractair compressor line, and air tools is presented in "Products for the Construction Industry," a 12-p. bulletin.—Sales Promotion, Dept. CG-15, Le Roi Div., Westinghouse Air Brake Co., Sidney, Ohio.

Circle 369 *on Reader Service Card*

CEMENT ADDITIVES—Placewel and Retardwel, two liquid admixtures for concrete, are described in CA-6A, a 4-p. brochure.— Johns-Manville, Cement Additives Unit, 22 E. 40th St., New York 16, N.Y.

Circle 370 *on Reader Service Card*

CRAWLER TRACTORS—Catalog UT 130 lists specs and data on the H-3 and HD-3 compact crawler tractors. — Allis-Chalmers Corp., Utility Tractor Dept., Milwaukee 1, Wis.

Circle 371 *on Reader Service Card*

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BIOCHEMISTRY
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PHYSICAL CHEMISTRY
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CONTROL SYSTEMS
CYTOLOGY
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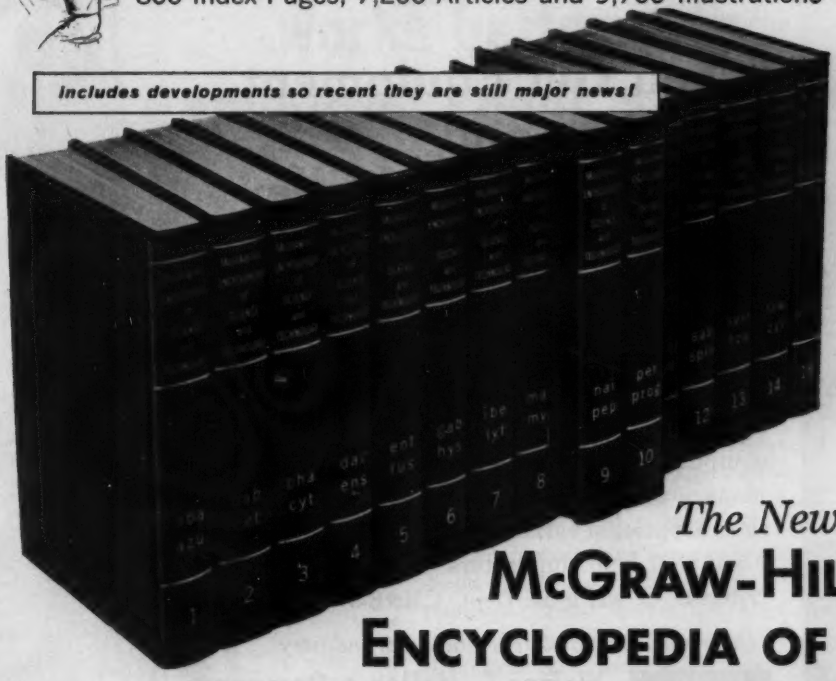

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849 S. Broadway, Los Angeles 14

Circle 210 on Reader Service Card

NEW PUBLICATIONS . . .

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

EXCAVATORS—Model 4500 Vicon with a 6-yd shovel or 7-yd dragline capacity is pictured in a 16-p. catalog. — Manitowoc Engineering Co., Manitowoc, Wis.

Circle 372 on Reader Service Card

LIME—Bulletin 325 tells how lime can improve hot asphalt mixtures. Included is test data on field projects in the West.—National Lime Association, Washington 5, D.C.

Circle 373 on Reader Service Card

WELDING TERMS—A new revision of AWS's "Standard Welding Terms and Their Definitions" is available at $2.00 a booklet. Included is a desk chart of 39 welding processes.—American Welding Society, Dept. T, 33 W. 39th St., New York 18, N.Y.

Circle 374 on Reader Service Card

TRUCK CRANE—A 12-p. catalog illustrates the model 1014 Unit truck crane. Rated as a 15-ton liftcrane and as a ⅝-yd excavator, the machine can be converted to dragline, clamshell, trenchoe, and magnet applications. — Unit Crane & Shovel Corp., Milwaukee, Wis.

Circle 375 on Reader Service Card

MORTAR — The use of Embeco pre-mixed mortar for achieving tough, water-resistant joints and masonry repairs is detailed in Bulletin EPMM-2B.—The Master Builders Co., Cleveland 18, Ohio.

Circle 376 on Reader Service Card

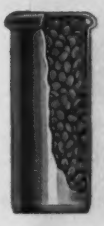
ROLLERS — Bulletin 500 illustrates the Amrol 8 and Amrol 12 steel wheel rollers, which feature direct-drive, selective steering control, and dual-position throttle. — Construction Equipment Div., American Marietta Co., Milwaukee 1, Wis.

Circle 377 on Reader Service Card

COMPRESSORS—A 6-p. bulletin, Form 2938, displays the line of Gyro-Flo compressors for general utility services. Three types of compressors are detailed: power take-off, truck-mounted, and wheeled. — Ingersoll-Rand Co., Attn. J. K. Uhler, Phillipsburg, N.J.

Circle 378 on Reader Service Card

Here's why any powder-actuated tool works better with Remington Loads and Studs



Exclusive "Kleanbore" Priming

22 caliber Power Load (twice actual size)

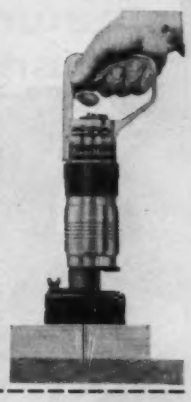
Green "Power-Guide"

¼" S-25 Stud (twice actual size)

Scientifically graded Remington Power Loads offer precise, uniform charges . . . have strong, non-rusting brass cases. Exclusive "Kleanbore" priming mixture protects bore of tool because it does not cause rust or corrosion. No need to clean barrel after every job! These quality Power Loads are subjected to multiple inspection during manufacture, are backed by Remington—a name well known to American sportsmen. No matter what powder-actuated tool you use, it will work *better* with Remington Power Loads!

Uniform performance and penetration are assured with precision-made ¼" and ⅛" diameter Remington Studs. These high-strength studs are made with special molybdenum steel. Specify Remington Studs with exclusive green "Power-Guide" heads . . . for uniform performance and straight-driving penetration. Over 60 "job-rated" Studs to choose from—your assurance of a Remington "Power-Guide" Stud to fit every fastening application.

Remington know-how insures the quality of its Studs and Power Loads. No other company can offer the background of experience gained through the manufacture of billions of these units. When you order studs and loads, you'll get better performance if you specify Remington—maker of the most versatile fastening tool ever designed (right). We'll gladly send valuable free booklets about Remington Power Loads, Studs and fastening tools. Mail the coupon today!



Remington Model 455A Stud Driver

Remington

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REG. U.S. PAT. OFF.

Remington Arms Company, Inc., Bridgeport 2, Conn.
IN CANADA: Remington Arms of Canada Limited, 36 Queen Elizabeth Blvd., Toronto 18, Ont.

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Please send—without obligation—catalogs on Remington Contractor & Industrial Tools checked:

☐Stud Drivers ☐Air Tools ☐Chain Saws
☐Concrete Vibrators ☐Flexible Shaft Machines

Name_____ Position_____
Company_____
Address_____
City_____ Zone___ State_____

Circle 211 on Reader Service Card

Trenching 7 miles of street, this Jaeger "125" Roto ran two 80 lb. breakers to line-cut and break a 7" top of asphalt over brick — averaged 1200 sq. ft. per 8 hr. day—used only 1½ gals. of fuel per hr.

Jaeger "125" Rotary speeds street work

2-wheel: 75, 85, 125, 250 cfm
4-wheel: 365, 600, 900 cfm

Instantaneous air delivery, under close and smoothly modulated control, enables the Roto 125 to maintain 100 lbs. minimum pressure under all demands up to 125 cfm. High efficiency results in slower speed operation, less fuel consumption, longer engine life than any other rotary. See your Jaeger distributor or ask for Catalog

THE JAEGER MACHINE COMPANY 800 Dublin Ave., Columbus 16, Ohio

PUMPS • MIXERS • TRUCK MIXERS • PAVING MACHINES

Circle 212 on Reader Service Card

Where's your small engine **PROBLEM?**

WEIGHT? SAFETY?
SIZE? ECONOMY?

use **YANMAR**
DIESEL POWER

AIR COOLED MODELS—
2 TO 4½ BHP
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Easy starting—
Smooth running.
Big engine features
in a compact package!

—a precision product of the new Japan made to U.S. specifications by the world's largest manufacturer of small diesel engines.

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for literature and dealer information, write

CONTINENTAL MACHINERY CORP.

19402 So. Susana Rd., Compton, Calif. Mailing Address: P. O. B. 5309, Long Beach 5, Calif.

Circle 309 on Reader Service Card

Advertisers' Literature

Listed below is free material offered in this issue's advertisements received up to Jan. 15. To get the items you want, circle appropriate numbers on the SERVICE CARD inside the back cover.

SCRAPER BUCKET — Report tells how dragline-crane's hoisting line can serve as track cable for Crescent scraper bucket.—Sauerman.
Circle 379 on Reader Service Card

TRACTOR-SHOVEL—Data explains H-30 Payloader with 3,000-lb capacity, 3 forward and 3 reverse speeds, 1-yd bucket.—Hough.
Circle 380 on Reader Service Card

COMPRESSORS — Data details series of AR, AR-L, and ER-6 compressors and rotary screw and air-cooled models.—Atlas Copco.
Circle 381 on Reader Service Card

POWER TOOLS—Catalogs describe stud drivers, air tools, chain saws, concrete vibrators, and flexible shaft machines.—Remington.
Circle 382 on Reader Service Card

ROCKCRUSHING EQUIPMENT—Bulletin 266 describes various components for rock-crushing. — Smith Engineering Works.
Circle 383 on Reader Service Card

CRANE—Case History Report No. 102 pertains to use of 110-ton P&H on Chicago's North Side.—Harnischfeger.
Circle 384 on Reader Service Card

CONCRETING—Catalog GA30 describes how Model G-42 mixes and shoots concrete with up to ¾-in. aggregate.—True Gun-All.
Circle 385 on Reader Service Card

POWER CHAIN SAW—Full information is available on seven professional models of portable power chain saws.—McColloch.
Circle 386 on Reader Service Card

IRON CASTINGS—A 168-p. catalog provides data on gray and ductile iron castings, such as drain and manhole covers.—Neenah.
Circle 387 on Reader Service Card

REMOTE CONTROLS—Bulletin DH-183 describes Tru-Lay push-pull remote controls for heavy equipment.—American Chain & Cable.
Circle 388 on Reader Service Card

Bethlehem wire rope supplies muscle for deepening Buffalo's harbor

Wire rope mill depots and distributors from coast to coast stock Bethlehem rope

Rigged entirely with Bethlehem wire rope, this 12 cu yd clamshell dredge is deepening the channel in Buffalo Harbor to facilitate the navigation of ships using the St. Lawrence Seaway. Operated by Great Lakes Dredge & Dock Company, the dredge is shown hard at work off the Niagara Frontier Port Authority Terminal.

The harbor improvement program is being undertaken in four stages at a cost of about $10 million. The work is due for completion in 1961.

The dredge operators are getting dependable performance from their Bethlehem wire rope. Whatever your construction work may be, you too, can rely on this fine rope for the really tough jobs.

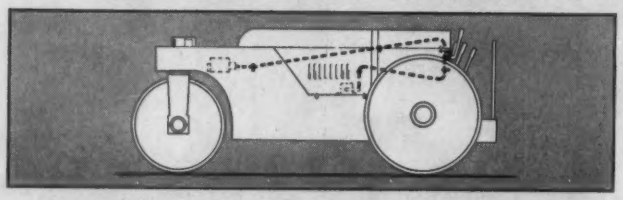
NEW CATALOG... "Bethlehem Wire Rope for Construction and Industrial Equipment" is a valuable reference of specific recommendations for the use of wire rope on bulldozers, shovels, derricks, cranes, and other equipment. Its 150 pages include data on grades, cores, and lays of wire rope, fittings, etc. Write today for your free copy. Ask for Catalog 493. Address your letter to Publications Dept., Bethlehem Steel Co., Bethlehem, Pa.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export Sales: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

PUSH-PULL CONTROLS

give lifetime remote control on construction equipment



• Whether on a tandem roller like the one above or on *any* piece of construction equipment requiring remote control, TRU-LAY PUSH-PULL CONTROLS will give maintenance-free service. They're factory-lubricated for life, sealed against dirt and moisture, and have but one moving part. Your equipment will be more dependable when equipped with PUSH-PULL CONTROLS for operation of air and hydraulic valves, clutches, transmissions, brakes, power take-offs and similar uses. ***WRITE FOR DETAILS... Ask for Bulletin DH-183.***

ACCO **PUSH-PULL CONTROLS**

Automotive and Aircraft Division
American Chain & Cable Company, Inc.
601-F Stephenson Bldg., Detroit 2 • 6800-F East Acco St., Los Angeles 22
929-F Connecticut Ave., Bridgeport 2, Conn.

Circle 214 on Reader Service Card

SEARCHLIGHT SECTION

(Classified Advertising)

EMPLOYMENT: BUSINESS: "OPPORTUNITIES" :EQUIPMENT :USED OR RESALE

RUBBER PRODUCTS for IMMEDIATE DELIVERY

CALL, WIRE or WRITE
CARLYLE
THE RUBBER HEADQUARTERS

LOW PRICES,
DEPENDABLE QUALITY
FOR 40 YEARS

WHAT EVER YOUR RUBBER NEEDS ARE!!

AIR HOSE	OIL HOSE
WATER HOSE	WELDING HOSE
SUCTION HOSE	VACUUM HOSE
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STEAM HOSE	
PILE DRIVE HOSE	DREDGE SLEEVES
HYDRAULIC HOSE	CONVEYOR BELTING

ELEVATOR BELTING
"V" BELTS

Write for complete catalogue

CARLYLE RUBBER CO., INC.
103-107 WARREN ST. Digby 9-3810 NEW YORK, N. Y.

Circle 310 on Reader Service Card

FOR SALE OR LEASE

Lima 30-ton wagon crane mounted on Lima carrier. New in January, 1960. Equipped with worm driven boom hoist and 15-KW generator.

THE A. S. JOHNSON COMPANY
3311 Jennings Road, Cleveland 9, Ohio
Phone SH 1-0214

Circle 311 on Reader Service Card

Your Inquiries to Advertisers Will Have Special Value . . .

—for you—the advertiser—and the publisher, if you mention this publication. Advertisers value highly this evidence of the publication you read. Satisfied advertisers enable the publishers to secure more advertisers and—more advertisers mean more information on more products or better service—more value—to YOU.

AD LITERATURE...

Listed below is free material offered in this issue's advertisements received up to Jan. 15. To get the items you want, circle appropriate numbers on the SERVICE CARD inside the back cover.

FORMS — Catalog 400 describes Form-Crete's line for job casting, prestressed, and custom jobs.—Food Machinery & Chemical.
Circle 389 on Reader Service Card

WIRE ROPE — Union's handbook of "Tuffy Tips" includes hints on use of wire rope, maintenance tips, and sizes.—Armco.
Circle 390 on Reader Service Card

BLASTING — "Primacord Detonating Fuse . . . What It Is . . . How To Use It" tells how to get best explosion.—Ensign-Bickford.
Circle 391 on Reader Service Card

STEEL PRODUCTS — Catalog G-104 presents information about CF&I's steel products for construction.—Colorado Fuel & Iron.
Circle 392 on Reader Service Card

CONCRETE EQUIPMENT — Stow's line of vibrators, roto-trowels, grinders, and vibrating screeds is outlined in a catalog.—Stow.
Circle 393 on Reader Service Card

TRAILERS — A folder illustrates Freuhauf's complete line of trailers, including hoist-type and bottom dumps.—Freuhauf.
Circle 394 on Reader Service Card

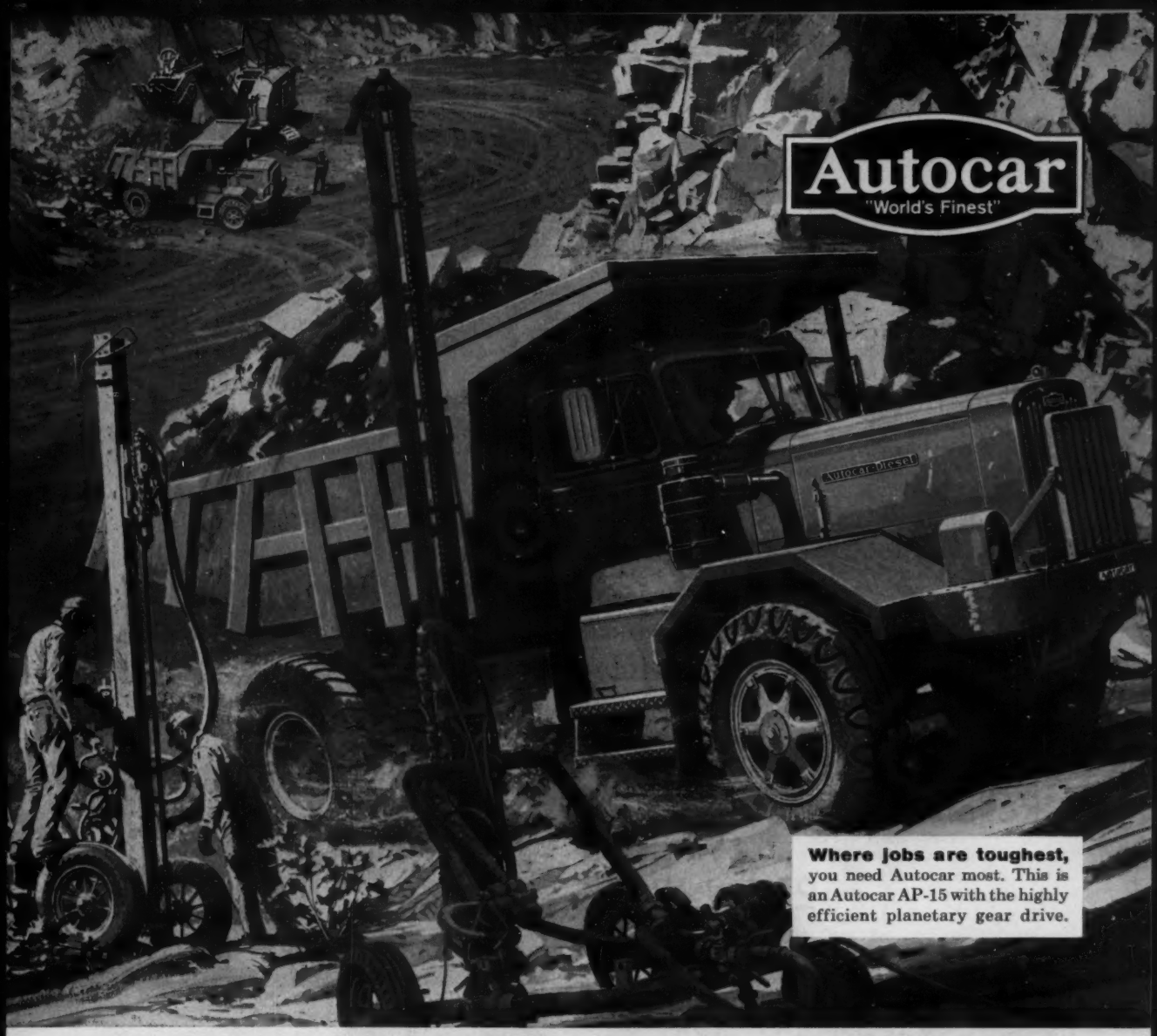
FORMING ACCESSORIES — Catalog 700 details types of form ties, anchors, inserts, hangers, and other concrete accessories.—Superior.
Circle 395 on Reader Service Card

BUGGY ENGINES — Bulletin S-254 describes models of various Wisconsin engines that can be used for concrete buggies.—Wisconsin.
Circle 396 on Reader Service Card

BEARINGS—A 20-p. catalog illustrates steel-backed and solid aluminum bearings for Cat engines and equipment.—Monmouth.
Circle 397 on Reader Service Card

DIESEL ENGINES — Literature is provided on small air-cooled and water-cooled models of Yanmar engines.—Continental.
Circle 398 on Reader Service Card

CUTTERS — Catalog illustrates a complete line of more than 100 hand and hydraulic cutters for cutting metal.—H. K. Porter, Inc.
Circle 399 on Reader Service Card



Where jobs are toughest, you need Autocar most. This is an Autocar AP-15 with the highly efficient planetary gear drive.

"Heavy hauling's for Autocar . . . not a substitute"

Need a truck that's versatile, tough under punishment, ready to do any kind of heavy job in any kind of weather? That's the kind of work for an Autocar AP-15.

This Autocar is at home on slippery shale rock; in deep, rutted mud; up grades that look impossible. That's because—with its planetary rear axle—the power is applied with greater gear reduction directly to the rim of the wheel.

Here's a truck plenty tough for anything that comes. It is constructed throughout—from bolted double frame to double-bottom body—to take the heavy shocks and jolts of the day's work.

Each Autocar is custom-engineered to order. Operators agree, Autocar is the "World's Finest." Why try to get along with less? White-Autocar comprehensive service throughout the United States.

Autocar
"World's Finest"

Division of
The White Motor Company
Exton, Pa.

Circle 215 on Reader Service Card

When you need
replacement bearings
you need them F-A-S-T!

Your ROLLWAY Distributor
has the Cylindrical
Roller Bearings you need
on the shelf!

When bearings fail, you've got to swing into action — fast. That's why your nearby Rollway Distributor maintains a broad line of Rollway bearings-for-replacement. Backed by the greatest range of types and sizes of cylindrical roller bearings available anywhere, he can speed needed items to you in the shortest possible time.

And, if bearing failure is chronic or exceptionally expensive, he can furnish the competent engineering and application assistance you need to solve a bearing headache permanently. Just ask him.

These are a few of the reasons why increasing numbers of front-line manufacturers are specifying Rollway Bearings for critical areas. The complete line includes radial and thrust cylindrical roller bearings for every application. Ask your Rollway Distributor for Catalog AD-1258. Or write Rollway Bearing Co., Inc., Syracuse, N. Y.

Where so much depends on so little . . . you can depend on

ROLLWAY®
BEARINGS

ENGINEERING OFFICES:

Syracuse • Boston • Chicago • Detroit • Toronto
Pittsburgh • Cleveland • Seattle • Houston
Philadelphia • Los Angeles • San Francisco

Circle 216 on Reader Service Card

Maintenance Shop . . .

Tire Specialist Keeps Rigs Rolling

WHEN TIRE FAILURES threatened to scuttle the construction schedule of the world's most powerful radio station, the Navy negotiated a tire servicing contract with a local dealer to put the $70-million project back on an even keel.

The radio station, which is located on a remote peninsula in northeastern Maine, is part of the world-wide communications network now under construction for the Navy. Transmitting facilities will include 26 antenna towers that range from 800 to 980 ft in height.

Contractors clearing the site for these towers had to overcome problems resulting from the rugged terrain and extreme weather conditions. Tire wear became an important factor from the time the first earthmover moved onto the site.

Prime contractor on the project is Continental Electronics Manufacturing Co. of Dallas, Tex., but many subcontractors are sharing the work. It's a big job, calling for 2,500,000 yd of unclassified excavation and about 100,000 yd of rock excavation.

While crews were clearing the 3,000-acre site, it became obvious that frequent delays caused by tire failures were endangering the job schedule.

So the Navy stepped in. Captain J. R. Burke, resident officer in charge of construction at the radio station, decided to bring in a specialist in the care and repair of tires used on heavy earthmoving equipment. Sharkey's Tire Service, a Firestone dealer in New Bedford, Mass., was awarded a contract that called for the payment of a flat fee per month by the Navy. The prime contractor was put in charge of supervising the contract. The tire company agreed to supply a repair truck and the full-time services of an experienced tire specialist. Any additional manpower was to be paid for on a per diem basis.

The Firestone dealer serviced the tires of the 300 pieces of equipment at work on the project. These included tractors, scrapers, wagons, cranes, and many types of trucks. The Navy owned some of this equipment and it leased the remainder from the contractors.

The tire dealer set up shop at the site in a small, centrally located building that served primarily as a storage area and a work shop for repairing tubes. Riding a two-ton service truck equipped with a 6,000-lb crane and a 34-cfm gas-operated compressor, the tire specialist handled inflation, rotation, replacement and minor repairs in the field. Any tires requiring retreading or vulcanizing were sent back to the dealer's main shop.

By contracting for a tire specialist, the Navy primarily was buying experience. And it paid off. Besides his direct services, the tire specialist gave invaluable advice on tire care and usage. In many cases, his recommendations about such simple things as tire pressures to match various operating conditions vastly increased tire life and efficiency.

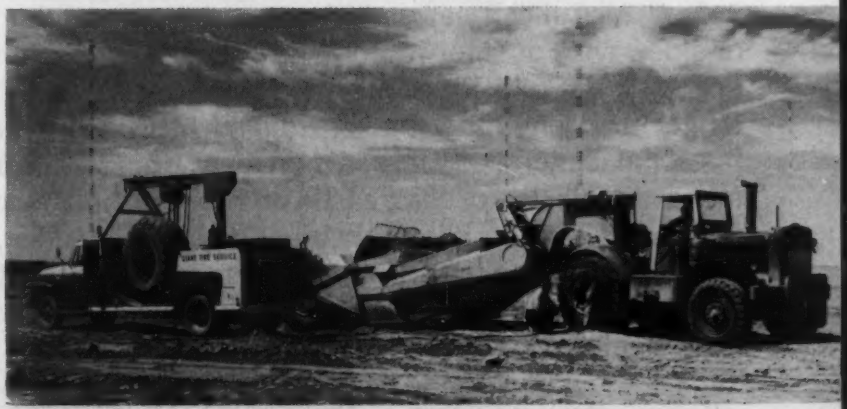
Selection of proper tires—traction, rock grip or free rolling—also was an important contribution of the tire serviceman, especially over terrain that varied from marshes to sandy soil to solid rock.

Sharkey's goal was to keep equipment rolling and to get rigs back into service quickly after necessary repairs were made. The tire specialist wasted no time in getting a bad tire off and another one on. It had previously taken the contractor several hours to change big tires; Sharkey handled this job in a matter of minutes. After changing a tire, the serviceman made a careful examination to determine whether it should be scrapped or sent back to the main shop for rebuilding.

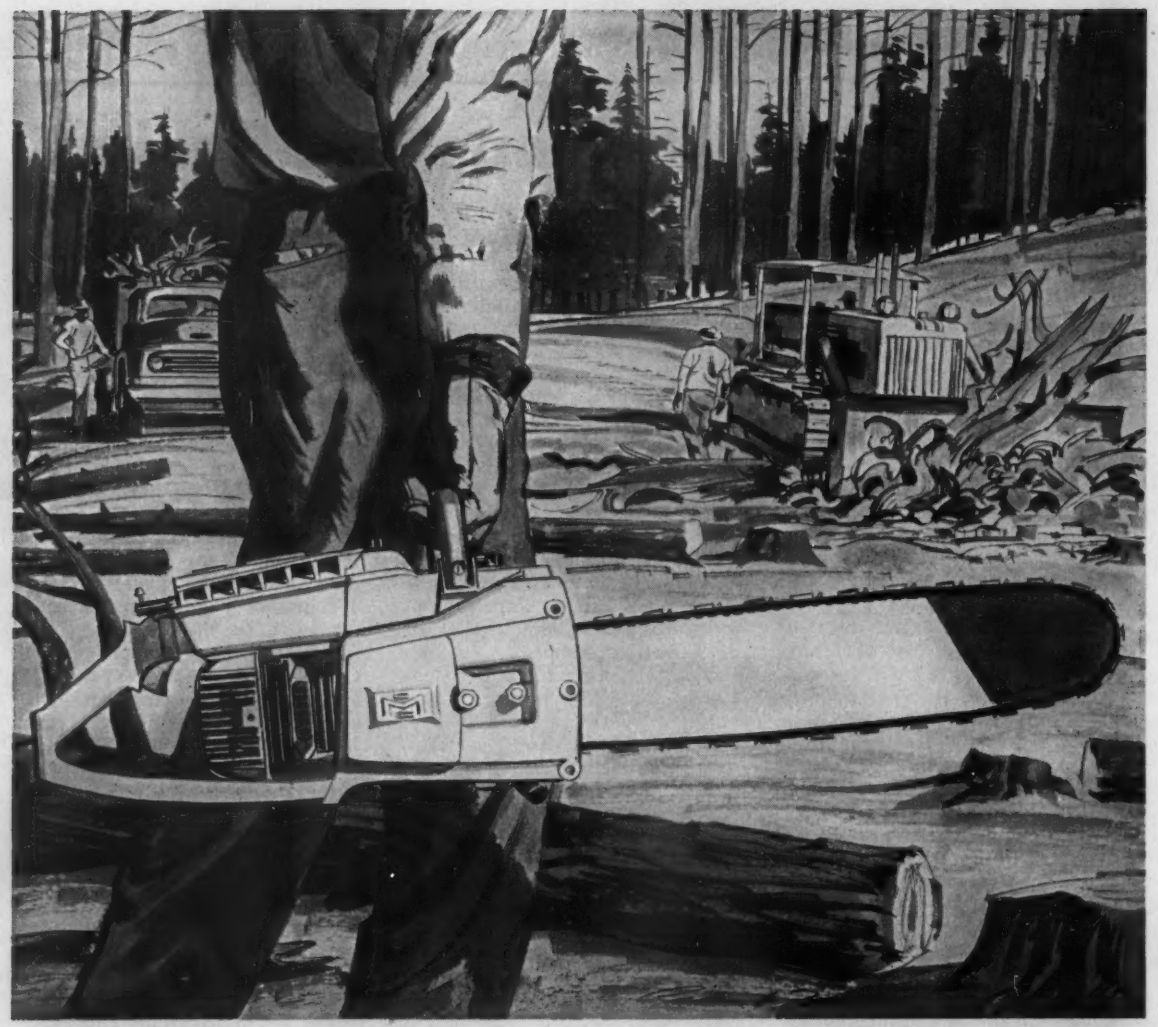
The tire specialist also solved several on-the-job tire problems that cropped up. Rocks lodging between the twin wheels of tandem trucks were causing serious damage to the tires. The Firestone serviceman suggested placing an endless chain around the rear axle between the tandem tires. The chain effectively ejected rocks from between the tires. The idea worked so well that all trucks with tandem wheels on the job were fitted with the chains.

Working with the prime contractor's master mechanic, the tire specialist also developed an alcohol bath unit that kept air chucks from freezing in cold winter weather. Temperatures at the site often dropped to 20 or 30 deg below zero, causing moisture in the air to freeze air chucks.

Completion of the project is expected on schedule this year. The Navy credits the tire service specialist with a big assist in meeting this goal.



READY TO ROLL—Tire specialist checks inflation of giant scraper tire after making a fast change. His repair truck is equipped with 6,000-lb crane and 34-cfm compressor.



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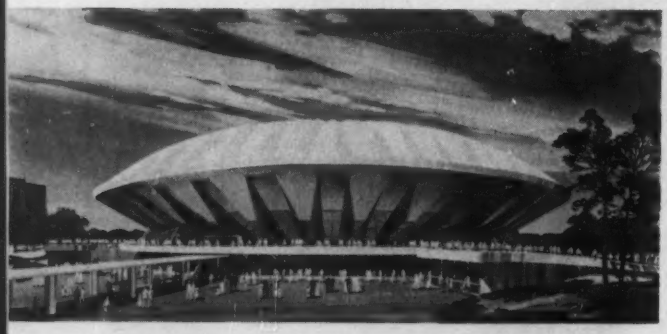

It's Not a Flying Saucer

It's a rendering of the new Assembly Hall being built at the University of Illinois by Felmley-Dickerson Co. of Urbana. The $6.5-million structure consists of a buttress-supported concrete bowl topped by a corrugated thin shell dome. Diameter of the dome is more than 400 ft.

The contractor will pour the dome this spring, rotating triangular form sections held by bar joists around a 100-ft-high steel falsework tower at the center of the dome. Then the Preload Co., Inc., will use a special wire winding machine to prestress a ring girder that circles the dome.

Sweet Revenge

It must have been more than ordinarily satisfying for Milwaukee Braves owner Lou Perini when Perini-San Francisco Associates won a $60-million contract for the Golden Gate slum clearance project.

One of the other bidders was Del Webb-Kern County Land Co., headed by the New York Yankee co-owner. The last time the two rivals squared off at each other was in the World Series of 1958, when the Yankees came from behind to win three straight and beat the Braves.

Quantity Down, Quality Up

The U. S. Office of Education reports a sharp drop in the enrollment of civil engineering students at the nation's colleges last fall. Freshman number only 5,600 this year, compared to more than 6,500 registered in 1959.

But if contractors find the quantity of engineering recruits diminishing in the next few years, they may fined quality improving. The University of Illinois now is offering a curriculum in construction engineering that should turn out graduates well-qualified to don a hard hat. The program is headed by Professor L. R. Shaffer and administered by the Construction Engineering Div. of the Civil Engineer-Dept.

A student majoring in construction engineering will take all the regularly required courses in civil engineering, plus five courses in his major field. These courses are construction and engineering economy, construction productivity, construction planning, construction cost estimates and analyses, and engineering law. They are designed to teach the student how to apply the fundamental principles of economics, mathematics, and the physical sciences to the construction problems of scheduling, planning, and the selection of men, materials and equipment.

A New Angle on Joints

A 14-mi-long highway to be built this year in Colorado will have diagonal transverse joints. Each joint will be cut 5 ft off right angles to the centerline.

The idea is to make a smoother ride for the motorist by eliminating the bump caused when two wheels of a car hits a joint at the same time. Whether it will make things smoother for the paving crew is another matter. A rarity in American practice, it is the first use of diagonal joints in Colorado.

Reds Go For Big Blasts

According to Tass, the Soviet news agency the Russians are experimenting with huge blasts of conventional explosives to handle dam earthmoving. They are planning a 7,000-ton blast at a dam site and Red engineers expect it to move 6,500,000 yd of material in one shot. So far, nine shafts with charging chambers have been sunk in the slopes of the gorge. The main shaft at the center of the future dam is 492 ft deep and it has a 141,000-cu-ft charging chamber.

Accurate placement of the blasted material depends on the size and spacing of the charging chambers. Soviet engineers are working on methods of calculating the effect of such large blasts.

Ordinary formulas do not apply when charges exceed 1,000 tons. The Russians hope to develop a method of shifting large masses of rock as an almost solid body.

Now They're Tracking Missile Bases

The Corps of Engineers is taking a step that will track progress of Titan missile base construction and help keep contractors on schedule. They signed a one-year, $400,000 contract with Ling-Temco Electronics, Inc., for a fast-response progress reporting system.

An L-T subsidiary, Temco Electronics and Missiles Co., will collect data at each Titan site, process it with electronic computers, and report results to the Corps. Each weekly report will include percentage completion figures for each phase of the job, status of critical equipment, work not done on schedule, and material deliveries due during the next week. The system may be extended to other construction activities at a later stage.

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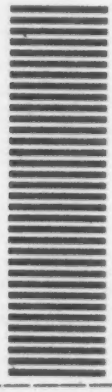

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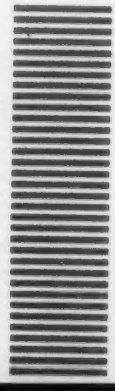

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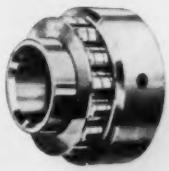

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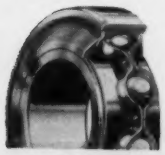

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